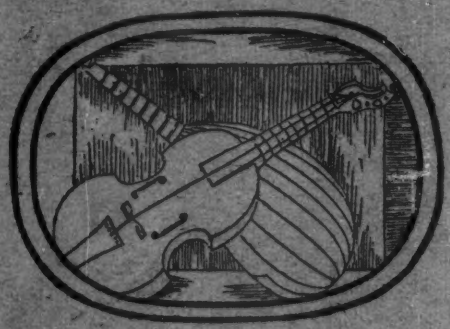
THE
Galpin Society
JOURNAL



MARCH 1948

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THE GALPIN SOCIETY

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THE GALPIN SOCIETY was formed in October 1946 with the object of bringing together all those interested in research into the history of European musical instruments. Its name commemorates the pioneer work of the late Canon Francis W. Galpin; its aims are to promote the study of the history, construction and functions of instruments of music and all cognate subjects, and to further this research by the publication of a JOURNAL and by all other practicable means. The Society plans to compile and publish bibliographies, catalogues and monographs on organological matters.

The Society is non-profitmaking; application for membership may be made by anyone, irrespective of nationality or country of residence. The annual subscription (one guinea) entitles the member to one free copy of each number of the Society's JOURNAL and to a substantial reduction in the prices of the Society's other publications.

The Galpin Society

JOURNAL

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The responsibility for opinions expressed in contributions to the JOURNAL rests with the writers.

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FOREWORD

A NEW PERIODICAL must begin its career by justifying its existence. There are already a number of excellent magazines in this country devoted to music, and it may very well be asked why there is any need to add to them. The answer is simple. This JOURNAL is devoted to a special branch of musical studies in which a very large number of people are keenly interested. Articles on musical instruments appear sporadically in other publications, but they are scattered over a wide field, and there is always a danger that research may lack co-ordination. The subject of musical instruments is one that appeals equally to the scholar and to the practical musician (though there is no reason why the two categories should not be united in a single person). The scholar pursues accuracy in the hope that his work may contribute towards faithful performances of the music of the past. The last fifty years have seen a very considerable growth both in our knowledge of old instruments and also in their cultivation by performers. But there is still plenty of work to be done. There are dark patches in our history waiting for illumination, and there are instruments which still await study by expert players.

It is the object of this JOURNAL to pool the results of research into the history of old instruments and to provide a platform for anyone who has anything of interest to say on the subject. The Galpin Society takes its name from one who spent a lifetime in the practical study of old instruments, in collecting them and in recording their history. We can be quite sure that Canon Galpin would have rejoiced in the formation of this Society and would have been among the first contributors to its JOURNAL. If he had had the opportunity of writing this foreword he would certainly have expressed the hope that others would follow his example and link theory with practice. We need more and more to realize that the study of old instruments is no mere antiquarianism but a severely practical subject. It can cast light on many things in old music which are still imperfectly understood, and by the service it renders to interpretation can remind us that truth and beauty are one.

F. GEOFFREY RENDALL

F. W. G.

1858–1945

CANON GALPIN was born at Dorchester on Christmas Day, 1858. His early aptitude for music, encouraged at home, was carefully fostered during his five years at King's School, Sherborne, by Sterndale Bennett, the son of the composer. Here he studied wind instruments in general and the clarinet in particular, and that his interests were already catholic is shown by a neatly written notebook in which the orchestral instruments are described one by one in detail and each provided with a chart of fingering. In 1877 he proceeded to Trinity College, Cambridge, where he spent more than five years, reading for classical honours with a view to holy orders. His leisure was given to music, and he is soon found taking a prominent place in University musical circles. He figured frequently as clarinettist in the concerts of the C.U.M.S. and his unusual proficiency soon attracted the notice of Sir Charles Stanford, at this time organist of Trinity and director of the Society. Stanford dedicated his 'Three Intermezzi' to him 'in deepest admiration', and writing of him some 35 years later says, 'Mr Galpin, an exceptionally gifted clarinettist, was equally indefatigable in working up a local orchestra, which by his indomitable efforts reached the number of 82. . . . The efficiency of this band was entirely due to the drastic methods employed by Galpin to ensure attendance at rehearsals,' and he might have added by his ability to supply any missing part, wind or string, as circumstances required. His understanding of musical instruments was indeed innate, a rare and precious gift, and they yielded their secrets to him readily.

It was no doubt at Trinity that he began his collection of instruments. We know at any rate that he acquired his first serpent at this time, awaking the echoes of Great Court with the roar of the evil beast. Here, too, he acquired an instrument which he treasured to the end of his long life, a clarinet presented to him by the C.U.M.S. in recognition of his services as librarian and committee-man.

Ordained in 1883 he took up parochial work at once. And here it is necessary to stress a most important point. Although enjoying a world-wide repute as a musicologist the canon was first and foremost a faithful and much loved parish priest. Music was a parergon, a pursuit to sweeten leisure, but was never allowed to encroach upon his chosen

work. Nor was it his only pursuit; he was a keen archaeologist, contributing many papers to the Essex Archaeological Society, and finding time to co-operate in a substantial work upon the Church plate of Essex. He was, in addition, a competent botanist, and a fellow of the Linnaean Society. He was, as Stanford said of him, indefatigable.

After a curacy of four years at Redenhall, where he found time to write a sizeable book on local flora, he removed to London and spent four years as curate at St Giles-in-the-Fields. Here his collection grew apace, for in 1890 he lent some 45 wind instruments, among them some of his choicest, to the Royal Military Exhibition, and here too his bible regal found its appropriate vocation in accompanying the hymn-singing in the men's mission at Seven Dials. It was here also that he married one who was to be his companion for more than fifty years. The wife of a parish priest has much to occupy her time, the more so when she is the mother of a growing family, but Mrs Galpin shared her husband's indefatigability, and somehow found time to become an accomplished lutenist.

In 1891 the canon left London for Essex and the remainder of his active parochial life was spent in this county. He was in turn Vicar of Hatfield Regis, 1891–1915, of Witham, 1915–21, and Rector of Faulkbourne, 1921–33. In 1917 he was made a Canon of Chelmsford Cathedral. To all this active pastoral work music formed an accompaniment. Always a firm believer in the educative value of music he was tireless in fostering village music-making wherever he went. A native of a county where strong traditions of Church bands still lingered, he regretted their passing as a humanizing influence definitely lost. So he took steps to replace them wherever possible with choirs, wind bands and orchestras. There would be nothing remarkable in this today, but sixty years ago such musical enthusiasm was uncommon.

At Hatfield the collection was enlarged still farther. It occupied much of the upper floor space of the large vicarage and threatened ultimately to swallow up the staircase. When William Lynd visited the vicarage in the mid-'nineties he found more than 300 specimens, keyboard, string, and wind 'all in a state of perfect preservation and each contrivance in playing condition'. Had he visited it some few years later he would have found the vicar engaged in building a water-organ based on an earthenware model from Carthage. For the canon had an eminently practical side. He not only kept his instruments in repair himself, but had exact and playable facsimiles made of the rarer instruments, rackets, shawms, and cromornes, to name a few, which even at this time were unprocurable. Some he would make himself, the hydraulus, for instance, and a portative organ, and in

later years a chekker made from the instructions given in the fifteenth-century manuscript of Arnaut de Zwolle. For the collection was designed from the start for practical uses. The instruments were there to be played upon, at home, in concerts or in lectures, and were not to be regarded as 'decorative but voiceless' specimens. They were freely available for public exhibitions and for lectures—Sir Frederick Bridge who delighted in the bass shawm and the recorders borrowed these instruments more than once—and for book illustrations. The author's *Old English Instruments of Music* and the third edition of Grove were illustrated from them, and the audience at more than one oratorio concert was thrilled by his towering contra-bassoon or by the authentic roar of ophicleide or serpent played by the canon in person.

By 1900 he had established his reputation as musicologist and collector. In this year he had arranged with his own system of classification the important exhibition at the Crystal Palace, so it comes as no surprise that he was invited in 1901 to arrange and describe the Crosby Brown Collection for the Metropolitan Museum of New York, or that two years later he rendered similar assistance to the committee of the Musikhistoriska Museet of Stockholm. In 1905 he placed his now unrivalled knowledge and many of his instruments at the disposal of the Worshipful Company of Musicians for their tercentenary exhibition. He lectured upon his water organ and took part together with Mrs Galpin in several of the illustrative concerts. His assistance was fittingly rewarded with the freedom of the ancient company.

In 1910 appeared his first big-scale work, *Old English Instruments of Music,* founded largely upon his own collection. The work ran into three editions, and though as eagerly sought as ever, is now unobtainable. His earlier work is, as we have seen, to be found in catalogues of exhibitions, or to be looked for and not always found in unindexed periodicals. In 1914 he undertook a task after his own heart, the rewriting of Dr Stainer's *The Music of the Bible.* With the first European War came a disappointment. He had decided reluctantly to part with his collection, now comprising between 500 and 600 specimens, and fervently hoped a purchaser might be found for it in his own country. The hope was vain, as so many before and since, and in 1916 the collection was transferred to the Museum of Fine Arts, Boston, Mass. Not all of it, fortunately, for some of the scarcest specimens including the bible regal, the cornetts, the clavichord, some of the Stanesby woodwind, the Neuschel sackbut were retained to be the nucleus of a choice, if smaller, collection.

This collection found an appropriate setting in the drawing-room of the house at Kew to which he retired in 1933, after fifty years of

pastoral work. This is not to say the last dozen years of his life were spent in inactivity; far from it. At 75 he was still alert and vigorous—to the end of his life he disdained the use of spectacles—and was as keenly interested as ever in the latest musical developments. A glance at the bibliography will show his pen was never more active. The *Music of the Sumerians* and the *Textbook of European Musical Instruments* appeared in 1937 in addition to a number of papers, articles and reviews, and to a copious correspondence which he conducted with scholars in all parts of the world. But he was never too busy to welcome his friends or to give encouragement and inspiration to researchers and collectors of a younger generation.

In 1938 he was elected president of the Musical Association; no sinecure, for it belongs to this honourable office to sum up the paper for the audience and to initiate the ensuing discussion. This he would with charm and urbanity, never failing to produce some stimulating comment from his wealth of knowledge or to illuminate a knotty problem from some fresh angle. Then came the war. The first years of it he spent in the country with his wife, but after her death in 1942 he returned to Kew. Then for the first time he appeared a little tired, but his spirit was still unbowed. His visits to the Musical Association and to the Reading Room of the British Museum became more widely spaced as time went on, but he was still as pleased as ever to see his friends, his letters were no less informative and encouraging. So it was a shock to learn in the summer of 1945 that he was in a nursing home. He hoped that it was merely a temporary measure, but his strength slowly ebbed, and on December 30th, five days after his 87th birthday, he died. He rests among his parishioners at Hatfield Regis.

So passed a very gracious personality. His friends and many correspondents will know well how much is implicit in this phrase. They will remember, too, with gratitude, the younger among them more especially, the many acts of unobtrusive kindness, the never-failing generosity with which he made them free of his books and instruments, above all the liberality and modesty with which he dispensed the fruits of his wisdom and great experience. That gracious memory and great tradition this Society will hope to perpetuate.

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(PMA = Proceedings of the [Royal] Musical Association, ML = Music & Letters, MMR = Monthly Musical Record)

CONTRIBUTIONS TO GROVE'S DICTIONARY

Canon Galpin contributed some 60 articles to the third edition of this work (1928) and to the supplementary volume (1940). In addition he was largely responsible for the arrangement of the plates, many of which illustrate instruments in his collection.

The most important articles are: Cheng, Collections of Instruments, Crwth, Gittern, Hydraulus, Lute, Pandora, Phagotus, Pipes, Regal, Ruckers, Tromba Marina, Virginal, Babylonian Music, Chekker, Electrophonic Instruments of Music.

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ANTHONY BAINES

James Talbot's Manuscript

(CHRIST CHURCH LIBRARY MUSIC MS 1187)

I. WIND INSTRUMENTS

THERE can be few scholars and practitioners of music who have not at some time felt a sense both of great thankfulness for the valuable collection of music manuscripts possessed by the Christ Church Library, Oxford, and also of deep gratitude to Henry Aldrich, Dean of Christ Church from 1689 to 1711, who gathered them together and put them there. It now appears that the historian of musical instruments is himself no less indebted to Dean Aldrich inasmuch as Music MS 1187—one of the few personal papers of the Dean which after his death escaped the destruction ordered by the terms of his Will—has recently been discovered to be a veritable mine of organological information.*

This is all the more valuable since it dates from a period which has hitherto failed to produce anything in the least comparable with the mighty compendia of Praetorius and Mersenne. Over the 135 years which elapsed between the latter's *Harmonie Universelle* and the 1767 supplement to Diderot's *Encyclopédie*, no comprehensive particulars of the form and dimensions of instruments have been unearthed in the literature of any European country. Yet it was during this same interval that the old Praetorian assemblage of instruments was replaced by the quite different set which characterizes the music of the eighteenth century. Therefore this chance relic of the Dean's vast curiosity into artistic matters, dating from exactly half-way through the obscure period, cannot but be welcomed as a document of the greatest interest, while in addition we shall surely feel particular pleasure that it brings to us at least some secure knowledge of every instrument among which Purcell, our most cherished musician, lived and worked.

The MS is a pile of uncollated papers among which a few, treating with Greek theory, are in the handwriting of Dean Aldrich himself, according to Mr W. G. Hiscock, M.A., the Librarian of Christ Church. But the bulk of the MS (including all that relates to the instruments) is in a different hand, and this identical with that of the following letter which was discovered amongst the pile:

* I am indebted to Mr Robert Donington for introduction to this MS.

To Mr John Shore *Present.*

With a thousand thanks for yesterday's favor, I return you, dear Mr Shore, your Lute, Cornet & Fife, of which two last send you the Tablature as you ordered me to set it down yesterday: be pleased to look it over at leisure, and to make such alterations in it as you think fit—against we meet, which I hope will be on Thursday or Friday afternoon at farthest. In the interim oblige me in sending by the Bearer your Mandole, & one of your Mouth-pieces with a crook.

I am with all gratitude,
Your faithful humble servant

J. TALBOT

The identity of this J. Talbot is disclosed by two letters in the British Museum (Add 28,881 dated 1697 and 28,894, undated) in the same hand and this time signed in full: James Talbot, Trinity College in Cambridge.

He was educated at Westminster School, matriculated 1683, became Fellow of Trinity 1689, and was Regius Professor of Hebrew from 1689 to 1704.

With an intention yet to be discovered, he obtained particulars of the various instruments from well-known London players. Some, like John Shore, Finger and Paisible are to be found in Grove's *Dictionary*. Nearly all are in H. C. de Lafontaine's *The Kings Music*. Mr Finger departed from England in 1701, so that Talbot must have gathered his information before then and after 1685 (see *Sackbutt*).

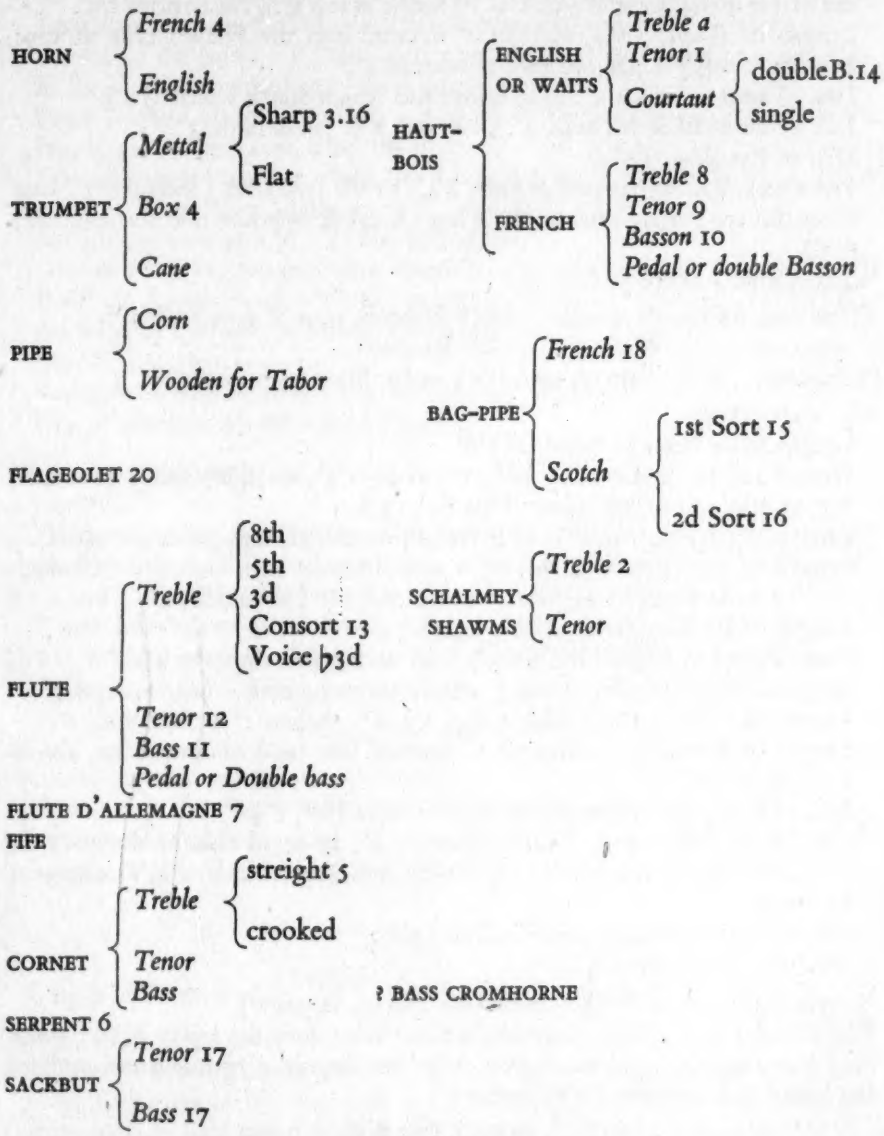
Owing to the fragmentary nature of his jottings it would seem best to collate the matter under the headings of the several instruments. To do this, reference letters will be adopted to indicate the three main groups into which his notes fall, which are:

Dimensions of instruments, given in feet (f.), inches (′) and eighth parts of an inch (″). Pages numbered a to 20	X
Tablatures and tunings	Y
General observations mixed up with extracts from Praetorius, Mersenne and Kircher	Z

The reliability of Talbot's facts can hardly be assessed until more is known of his musical activities. But the numerous corrections in his notes (they are so many that only final versions are given here in most cases) are at least evidence of his intention of recording accurately. His method was also Mersenne's, and John Shore was to Talbot as *le sieur Quiclet* to the venerable Frenchman. Talbot's inconsistencies of spelling, punctuation and so on have been faithfully reproduced.

WIND INSTRUMENTS

His general arrangement of the Wind heads X; only those instruments which have a page number after their names were measured up:



ENGLISH HAUTBOIS

Xa. ENGLISH HAUTBOIS or WAITS TREBLE. Charter, Star & Garter in Swallow Street, Pickadilly.

Length (without Fliew & Reed) from Head to Bowl [*corrected from* Pavillion] 2 f. 1′6″

From Head to centre of 1st hole, 3′7″½; to 2nd, 3d, 4th, 5th & 6xth, 1′2″; from 3rd to 4th, 1′4″; from 6xth to 7th (oblique) 1′+. Other Holes may be made below (not for fingers) but Tuning to the proper Pitch.

Height of Fliew, 1′1″. Its Diametre at top, 1′3″.
Length of Brass Staple, 2′3″ (whereof 1′1″½ inserted into the Bore of Instrt. 1′1″½ into Fliew.)
In the Fliew at top a Hole (4″ dia. 2″ deep) to open a way for the passage of the Staple through the Reed: Dia. of Staple at top 1/10′, at bottom 1/5′.
Length of Reed, 1′1″½ whereof 2″ inserted into the Fliew's hole at top: breadth at top 3″⅝. Dia. of reed at bottom 1″.
Dia. of head at Top, 1′5″: of its bore (into which Staple inserted) 2″½.
Dia. of 1st & 2d & 7th hole, 2″. 3d & 4th, 2″⅜. 5th & 6xth, 3″.
Dia. of Pavillion, 3′5″+.
From 6xth hole to 1st tuning hole, 2′4″: to the two next (oblique), 3′. Last from the 1st Tuning hole to the 2 last (direct & opposite one above other) 6′1″½.
This Instrt. 1 entire piece.

Y. ENGLISH HAUTBOIS. TREBLE. (CHALMIE) Mr Robinson, near St James Church Waits Mr Banister.
[Tablature, *c′* to *b″*, diatonic with B's ♮ and ♭. Six fingers give *d′*.]

X1. WAITS TENOR.
Length from Head to Bowl, 2f.5′6″.
From Head to Centre of 1st hole, 6′; to 2d, 1′5″, to 3d & 6xth, 1.4; to 4th, 2.5; to 5th, 1.6; to 7th under Brass Key, 3.7.
Length of 1st Joynt, 1f.4′1″, to Barrel if joynted (though generally entire).
Length of Barrell (moveable) tip'd with Brass at each end, full of holes, 4′1″. Outside diametre of Barrel at each end, 2′1″; in middle, 2.3.
Length of Br. Key (with double handle) 4′.
From Barrel to each of the Sound holes at the Side opposited, 2′6″.
Length of Fliew, 2′. Dia. at top, 2′; of hole receiving reed 3″ (whose depth 2″).
Length of Reed, 1′3″; breadth at top, 3″½. Dia. below 1″+; insertion, 2″.
Length of Staple, 3′2″, whereof 1′ inserted into head of Instrt. Dia. above 1/10′, below 2″.
Dia. of head, 1.4″; of bore into which Staple [fits] 2″½.
Dia. of 1st hole bored oblique upwards, 2″; 2d & 3d oblique downwards, 2″+; 4th (obl. upwards) 2″¼; 5th & 6xth (obl. downwards) 2″½. Thickness at Holes, 2″.
Dia. of Bowl [*corrected from* Pavillion] 3′3″.
Dia. of Sound holes, –3″.

Y. TENOR [*to right of* English Hautbois. Treble; *see above*].
[Tablature, *f* to *g″*. There must be an error here since the lower octave starts on *f* (six fingers, *g*) and the upper on *g′* (six fingers, *a′*) while between them the note *f′* is left without a fingering.]

SCHALMEY

X2. SCHALMEYE. Martin Wise (Charter)
[?] Saxon used Much in German Army, etc. Sweeter than Hautbois. Several sizes & pitches.

Length of 1st Joynt (Tenor 1′1″)	1f.	2′	½″
„ „ 2d „		10	½
	2	1	0

Length of Fliew, 1′7″; of brass Staple, passing through Fliew, 3′ whereof 1′ inserted into Head of Instrt; 3″ into Reed. Length of Reed, 1′2″.
From Head of Instrt. to 1st hole, 4′7″; to 2d, 1.4″; to 3d, 1′2″; 4th, 2′4; 5th & 6xth, 1′3.
At the head of 2d Joynt a Barrel (moveable) with 3 Knots of holes, its length 2′6″. Under the Barrel a 7th hole whose Diametre [——] distant from the top of the Joynt 2′½″; this open which in the Tenor has a key to stop it, in the Treble would add a Note if stopd.
From bottom of Barrel to little soundhole (direct under 7th) 1′3″, & to the two larger on each side, from the little one, 1′3″.
Dia. of hole in Fliew by which the Reed passes over the Staple, 3″; of Fliew at top, 1′2″; of Brass Staple at top ⅝″, at bottom 1″½.
Bre adth of reed at top, 2″½; dia. at bottom, 1″.
Dia. of 1st Joynt where Staple inserted, 2″½; at bottom of Tenor, 4″½; of Bowl tip'd with Brass, 3′1″; of 1st, 2d, 3d Holes in 1st Joynt, 1″½; of these the 1st runs upward, the others downward.
Dia. of the 3 last [——].
Barrel tip'd with Brass at each end as is the head.
Dia. of 7th hole, 2″; the rest ad libitum.

Y. CHALMEYE TREBLE
SHAWM

[Tablature; the low *b* is penned in dots, thus agreeing with the above remark about the 7th hole. Thence it runs from *c′* (six fingers) to *c‴* diatonically, with B's ♮ and ♭. To the right of it is:]
Tenor, having key to 7th Hole.
[Only the bottom note (7 fingers) is given, and this (in alto clef) as:]
g & *f*.

FRENCH HAUTBOIS

X8. FRENCH HAUTBOIS/TREBLE (Bressan)

From head of 1st Joynt to Tennon [*corr. from* small end]	0	8	3½
From head of 2d Jt.	0	8	3½
Length of 3d Jt.	0	5	5
	1	10	4

Length of Tennon of { 1st Joynt / 2d „ } & cons. of socket in { 2d. 0 1 0 / 3d. 0 1 1½ }

From head of 1st Joynt to 1st Hole, 5′2″⅜; to 2d, 1.1; to 3d. 1.2; to end of 1st Jt, 2″; from beginning of 2d Jt. to 4th hole, 1′6″⅜ (in all from 3rd to 4th, 2′+). From 4th to 5th, 1.1+; to 6xth, 1½″; to hole under great Br. Key, 3′; from 6xth to hole under little side key, 1.6¾; from great hole under Br. K. to sound hole in each side, 2′2″½.
Dia. of bore in 1st Jt, above 3″; below 4″ of 2d Jt, below 5″⅜; of 3d Jt, below 1.7⅛.
Dia. of 1st, 3d & 4th holes, 1″½; of 2d 1″⅜; of 5th, 6xth, 7th & 8th, 1″⅜. Of soundholes, 2″; distance between the little holes of the 3d & 4th Rank, ½″; Thickness of 1st Jt. above 2″½+; below 1″.
Breadth of Reed at Mouth, 3″; Length, 3′7″ whereof 5″½ inserted. Dia. at brass end, –2″.

Y. [Tablature, by Mr La Riche, chromatically from c' to c''' with two interesting enharmonic distinctions, viz:]

$f''\sharp$:	Key		$g''\sharp$	$a''\flat$
	Flat	Sharp		
	.	.	.	.
	.	.	.	.
	.	.	x.	o
	o	x.	o	.
	.	o	o	o
	.	o	o	o

[x means close *one* of the twin holes]

Z. The present Hautbois not 40 years old & an improvement of the great French hautbois which is like our Weights.

The reed must be well moistened before the Instrt. will sound well to preserve itself the Wind within . . . The 7th hole is stopd by a great brass key by reason of Distance: on the same Joynt an 8th Hole on each side for right or left hand opened with a less Key. 3d & 4th holes are double for taking of half notes upon one, otherwise both stopd.

[Compass c' to c''' with all intermediate tones & semitones on stave.] Its compass more proper for Consort than most Wind Instruments. Its sound lively & not much inferior to Trumpet: with a good reed & skillful hand it sounds as easy & soft as the Flute.

X9. TENOR HAUTBOIS (Bressan)

Length of Instrt. 2 9 6

Head to 1st Hole, 8′3″; to 2d, 1.3+; to 3d, 1.2½; to 4th, 3.5½; to 5th, 1.5½; to 6xth, 1.5; to 7th, 4′7″; from 6xth to 8th or little K. hole, 2′6″.

Length of great key 5′½″; little key, 2.6½.

Dia. of Bore at head, 3″¼; at bottom 2′7″.

Dia. of 1st & 3d holes, 1″¼; 2d & 4th 1″½; 5th, 6th & 8th, 2″; 7th, 3″; sound-holes 1″¾.

Thickness 1″.

Y. [Merely gives its lowest note:] g (Mr Finger).

Z. Tenor Hautbois 4 notes lower; finger as Basson. The Tenor Hautbois differs not from Treble in shape, only in size & bore of holes which being at greater distance are bored more slantingly downwards that the tops may be covered with the Fingers.

The Tenor I've seen is entire made by Ashbury.

BASSOON

X10. BASSON

Length of Head (Cap) or 1st (highest) Joynt	0	11	4
of 2d or middle Joynt	1	7	7
of 3d or lower Jt.	1	6	0
	4	1	3
Length of the 4th or side Jt having 3 holes & a mouth at top for the Crook	1	9	6
Length of Conveyance is	5	11	1

Length of upper / lower } Tenon or joynt { & Socket in 2d 1.5½ / & Socket in 3d. 1.7½

Tenon below in 4th Jt. & socket in 4th [3rd?] 1.5½

Length of the Reed 1′6″½; of the Brass (Crooked) into which it is inserted 0 2 2½

Length of the Brass Crook whose small end inserted into reed 7″, its great end into 4th Jt. 6″ 1 3 4

The six 1st holes bored obliquely for convenience of fingers. Distance of 1st hole in the side Jt. from the top, 10′1″; of the 2d & 3d, 1.2½; between 3rd & 4th hole (which begins the lowest jt), 11.2; (4th from top of the Jt, 4′3″); to the 5th, 1′; to the 6xth, 1″ [?]⅜; to 7th under brass key, 6.4; 8th from top of same Jt (behind) 5.5½; to 9th under lower brass key in 2d jt, 7.2½ (9th from bottom of 2d Jt, 4′½) to 10th between the Brass Keys, 6′6″; to 11th under brass key 8′;

Note that the 9th, 10th & 11th holes are stopd with the Thumb, the 9th & 11th by means of brass Keys at each end of the 10th hole.

Width of Reed 4″; Dia. of long Crook next reed, 1″; next side Jt, 3″½. Dia. of socket of Crook in side Jt, 5″; below at Tenon, 5½. Hence the wind passes down the 1st Tube of the great joynt & ascends in the 2d into the middle Joynt, whose dia. at the lower Tenon, 1; at the upper Tenon, 1.2½, as of the Cap or 1st Jt.

Dia. of the 1st, 2d, 3d holes, 2.½; 4th, 5th, 3″; 6xth 2″; 7th & 8th, 3″½; 9th, –3″; 10th, 3¾; 11th, 3½. Thickness of side jt. above, 1″½, below 2″½; of lowest jt, 3″; of middle jt, 2″; of cap at top, 4″.

Y. [Fragmentary tablature embracing the lowest octave only, from *B′♭* to *B*. Below it is:]

Pedal or Double Basson. Mr Finger

FFF

Fagot & Double Courtaut 2. Tenor & Treble Courtaut

CC

Note that the fingering of the Basson, Pedal, & Double Courtaut & Fagot is the same with that of the Flute.

Z. Pedal or Double Basson, FFF, touch as Basson.

Double Courtaut, CC, touch same with Basson: there are treble & tenor courtauts.

Fagot disused; touch same with Basson: CC same with Double Courtaut. Not used in Consort.

Basson has 4 Joynts, Fagot entire.

Best Reeds from Marshes of Spain and Provence.

DOUBLE COURTAUT

X14. DOUBLE COURTAUT

From the top of the 1st Conveyance where Crook is inserted to its bottom	1	10	6
Thence to the pavillion above	3	1	7
Whole length of Conveyance	4	0	3

Length of Plug at bottom covered with Brass			1+
of Whole Instrument	3	2	7
From end of Pavillion to top of 1st Conveyance		3	7½
From top of 1st Conveyance to 1st Hole (which runs obliquely upwards, as does 4th)		10	5

From 1st to 2d & thence to 3d, 1.2½, as also from 4th to 5th & to 6xth.
From 3d to 4th, 7.2; from 6xth to 7th under Brass Key, 6.4+. Length of Br. Key, 6'7; These holes of 1st Conveyance.
From beginning of 2d Conveyance to 8th Hole (under Brass Key) 7.3+. Length of Br. K. 4.4.
From 8th to 9th, 4'; to 10th, 10.1½+. N.B. These Holes bored obliquely towards 2d Conveyance.
Dia. of 1st Conveyance where Crook inserted (increasing downwards) 4".
Dia. of Pavillion, 1.3½. Dia of 1st, 2d & 3d Holes, –2"; 4th, 5th & 6xth, 2+; of 7th, 8th & 10th, 3"; 9th, 2"½.
Breadth of Instrt. at Pavillion, top 2.5½; bottom, 2.1.
" at 1st Conveyance, 3.1.
" at bottom of Plug, 2.2½.

Y. [To the right of *English Hautbois, Treble* and *Tenor* (see above) is written:]
Bass Double Courtaut Mr La Riche
[but the stave for the tablature is empty.]

FLUTE

X7. FLUTE D'ALLEMAGNE

Length of 1st (Head) Joynt to the 2d,	1	0	7
of 2d (middle jt) (without)		10	7
of 3d (lower jt)		4	1
of Instrt.	2	3	7

Length of Tenon of 2d Jt & conseq. of 1st Joynt's socket, 0.1.2
Length of lower Tenon of 2d Jt & conseq. of 3d Joynt's socket, 0.0.5½.
Distance of little soundhole (in the 1st Jt) from the top, 0.0.7½. Of mouth-hole from the top, 0.4.5 from top of 2d Jt to 1st hole, & 3d to 4th, 0.1.6½.
From 1st hole to 2d, 1.1; 2d to 3d, 1.3; 4th to 5th, 1.2¾; 5th to 6xth, 1.3½.
From 6xth to end of middle jt, 0.0.3½.
From top of 3d jt to the Hole under Brass Key, 0.1.7½.
Dia. of 1st Jt. & of 2d above, 0.0.6.
of 2d Jt below & of 3d above, 0.0.5½.
of 3d Jt below, 0.4.4¾.
of mouth-hole in the 1st Jt, 0.3—.
of 1st & 2d hole, 0.2+; of 3d & 4th, 0.2;
of 5th, ¾0.2; of 6xth, p.1¾; of 7th, p.1½ & also of sound hole at top & thickness of Wood.

Y. [The stave for the Tablature, to have been supplied by Mr Paisible & Mr La Riche, is empty.]

Z. FLUTE D'ALLEMAGNE

Bressan's Flute D'Allemagne has 6 notes in the middle Jt & one in the lowest which is covered by a Brass Key. The upper Jt has one hole for the mouth, about an Inch & half above this a cross piece of wood (or Plug) determines the length of the long bore. From the Plugg to the mp about 4 inches. The Brass Key is entire & has a small brass Spring under its upper end.

RECORDER

X13. TREBLE FLUTE.

[Left blank.]

X12. TENOR FLUTE. Bressan

Length of Head Joynt	0	9	7
of 2nd Jt (without) (middle)	0	10	6½
of 3d Jt (Lower)	0	6	6
	2	3	3½
of upper Tenon of 2d Jt	0	1	3
of lower Tenon	0	0	7
Distance of Tongue [*superscribed* Fliew] from top of head	0	2	7

Length of Fliew [*corrected from* Tongue] on each side, 7″; at middle 1′½″.
Width at top 5″, at bottom 5″½ (as also of upper tongue [*superscribed* Mouth]). Diametre of Mouth [*corrected from* upper tongue] ½″.
From beginning of 2d Joynt to hole below, 7″; to 1st h. above, 1′5″; distance between 1st & 2d & 3d as also between 4th, 5th & 6xth, 1.1+; between 3d & 4th, 2.1; between 6xth hole & end of 2d Jt, 7″+.
From beginning of 3rd Joynt to 7th hole under Brass Key, 2′.
Length of Brass Key, 2′7″½.
Dia. of 2d Joynts bore above 7″⅜, below, 5″½ & at bottom of 3d Joynt.
Dia. of hole below, 3″; of 1st, 2d, 3d, 4th & last hole, 2″+. Thickness of 2d Jt, 1″.

X11. BASS FLUTE. Bressan

Length of Cap (closed at top)	0	5	1½
of Head Jt (1st Jt)	1	0	4
of middle Jt	1	2	7
of Lower Jt	1	0	5
Length of upper Tenon of 1st Joynt & consequently of the Plugg,	0	1	5¾
„ „ „ „ of 2nd Joynt & conseq. of the 1st Joynts socket,	0	2	0
„ „ lower Tennon of 2d Joynt & cons. of 3rd Joynts socket,	0	1	3
Distance of Crook hool [hoop?] from top of head	0	2	7
„ of Tongue from top of 1st Jt	0	0	4
Length of Tongue at each side	0	1	1+
at middle	0	1	2¾
Breadth at the top	0	0	6+
at bottom	0	0	7

From top of 2d Joynt to 1st hole, 2′; thence to 2d & 3d, 1′2″; from 3d to 4th, 4.3; to 5th, 1–2⅜; to 6xth 1.1; to bottom of 2d Jt 1.3; from top of 2d Jt

to underhole 1′+; from top of 3d Jt to hole under Brass Key 3.2; length of Brass K. 4.5.

Dia. of 1st Joynts bore at both ends & consequently of Plug, 1.3+; of 2d Jt, above 1.2¾; below, 1′+. 3d Joynt above & below, 1′. 1st sound-hole from bottom of 3d Joynt, 1.6⅛. Dia. of Crookhole 4″⅜; of underhole in 2d Jt, 3⅛; of 1st, 4th & 7th, 3″; of 2d & 5th, 2″⅜; of 3d & 6xth, 2″⅛; of sound-hole near the bottom, 1′2⅛. Thickness of 3d Joynt (Taper towds end) 1″⅛.

Y. Pitch of Flutes [*notes which follow in square brackets appear in original on a stave.*]

Fifth higher [*c″*]. Eighth higher [*f″*]. Voice, Third lower [*d′*]. Tenor, 5th [*sic*] lower [*c′*]. Bass [*F*]. Double Bass [*C*].

CORNET

X5. CORNET. Mr Shore, streight of Box

Length of Instrt. without Mouthpiece	1	10	4
Fom the top to the 1st hole underneath	0	7	6
„ „ „ to 1st hole above	0	8	7

From 1st hole above to 2d, 1.3; to 3d, 1.1½; to 4th, 1.4; to 5th & 6xth, 1.3+.

Thickness, 1″⅜.

[Another series of figures is written above the preceding series (which is, however, not crossed out); this second series runs: 1.11.4; 8.7; 9.7; 1.2; 1.3; 1.3; 1.2; and thickness, 1″½.]

Bore of mouthpiece, above, 5″; within, 2″; from above to within, 4″.

Bore, above, 3″; at bottom, 1′1″.

Bore of 1st hole underneath, 2″+ & of 1st & 2d above;
of 3rd to 6xth, 2″½.

Y. [Tablature, by Mr Shore, chromatically from *c′* to *f‴*. Blank staves are left for:]

Tenor Cornet Bass Cornet

Z. Best English Cornets made at Doncaster in Yorkshire. Ag.

SERPENT

X6. SERPENT. Le Riche & Lewis.

Length of mouthpiece 2′2″ (whereof 1′ inserted in crook)	0	1	2
„ of crook. 1f.3′ (whereof 2′ inserted in Head)	1	1	0
„ of Instrt.	7	7	0
[inserted later:] at side	7	1	4
	8	3	6
Distance of 1st Hole from Head of Instrt.	2	8	6

Distance between all the holes, 1′4″; except from 3d to 4th, whose distance 1f.4′.

Dia. of mouthpiece at top, 1′; within lower, 2″+; at bottom, 3″.

Dia. of Crook at top, 4″; at bottom, 7″ } increasing in
„ „ Head's bore, 1′; of bottom's bore, 3′7″ } bore downwards

Thickness, 1″½.

Y. [Tablature, Mr La Riche. The stave gives *G'*, *C*, *E*, *F*, (bar line,) *G*, and the rest is blank; nor are any fingerings given.]

Z. [Following a note on the lowest (falset) notes:]
These both unnatural to the Instrt. & unmusical to the Ear. The half-notes are made by stopping half a hole. The best players (acc. to Mon. [?]) DD. Mr La Riche GG: CC easy.
[Later in same:]
La Riche's Serpt's Body of Wallnut. Crook of Brass. Mouthpiece of Ivory. Towards the last fold a brass loop to wch a Ring for a ribband is fastened. (Lewis.)

SACKBUT

X17. SACKBUTT. Bass
[The reference letters which follow refer to Mersenne's drawing of the *Saquebute*, and are subsequent interpolations in the MS.]

From top (B) of the inward Yard next mouthpiece to beginning of outward Yard	0	2	2
Thence to beginning of (F) 1st Joynt of Crook [*corrected from* Potence]	2	9	0
Thence to beginning of 2d Joynt (K)	0	10	6
„ to (D) end of outward Yard under 1st Barr	2	9	0
„ to (L) upper end of the inward yard whereof 7″ inserted into the separate Jt wch begins thereto	3	2	3
„ to the beginning of Joynt of 2d Crook	1	5	4
„ to beg. of the last Jt but one		9	1½
„ „ „ „ „ „ „ above the Pavillion		9	0
„ „ end of Pavillion	1	11	3
Length of Instrt. at shortest:	14	8	5
Length of {1st / 2nd} inwd yard from insertion into outward	2	8	7
	2	8	4
Length with yards drawn out:	20	2	0
From next mouthpiece to 1st Barr (C)		1	1½
Depth of all Barrs.			6
From 1st Barr to 2d (E)		1	6
„ beginning of separate Jt to 3d Barr (M)		6	1
Distance between yards (or Breadth of all Barrs)		3	5
Dia. of Yards			4
of Pavillion		4	3

The Tenor Sackbutt seems to bear the Proportion of 8/11 so that it appears to be about 4 f. shorter than the Bass. Dia. of yards, 3″+; consequently Pavillion, 3′2″.

Y. [Blank stave prepared for]
Sackbutt. Bass Treble Tenor
Mr Finger Mr Bull

Z. Chief use of Sackbutt here in England is in consort with our Waits or English Hautbois. It was left off towards the latter end of K.Ch. 2d & gave place to the Fr. Basson. Bull.

X3. TRUMPET

From top joyning to Mouthpiece to beginning of 1st Joynt at middle of Garnish	1	10	0
Thence to its end		1	6
„ to beginning of 2d Joynt (or length of the 1st Crook) [*corrected from* Potence]		4	3
Length of 2d		5	4
Thence to 3d	1	5	3
Length of 3d		2	4
Thence to 4th (or length of 2d Potence)		4	3
Length of 4th		4	4
Thence to 5th		7	2
Length of 5th		4	$6\frac{1}{2}$
Thence to bottom, or length of Pavillion		10	4
	7	0	$7\frac{1}{2}$
Length of single Mouthpiece inserted into the Instrt. or Crook, 3.0; its whole length		4	4
Length of double Crook without any addition (of which One Inch inserted into Instrt.)	1	2	6

This alone makes the Trumpet two Notes lower viz. from E to C. Single Crook, 7′, adds one Note.
N.B. [*repeats the above*] (Bull)
Diametre of Instrt. towards mouthpiece (which continues much the same to the 5th) 4″.
Dia. of Pavillion, wch lessens up to 5th, 4′2″.
Dia. of Mouthpiece at top lessening inwards, 7″.
at entrance of Wind, 2″.
Mouthpiece or Crook may be lengthened by adding to either several pieces married one into the other, which alters the Pitch.

Z. Yards & Pavillion turned on a rod. Boss in middle of Pavillion: Garnishes over every joynt. Pitch may be raised or fallen by several Shanks from 1′ to 6′. 1st Yard runs through right side of Boss.
Best mettal Bastard-Brass mixed with solid Brass: Worse Silver & [*interpolated above*: worst] copper springy [?].
Garland put on to strengthen Pavillion. Garnish placed at the mouthpiece. Bull.

[Later in same]
The natural pitch of the Trumpet is ♭E which may be varied by crooks of several lengths to D, C, B, ♭B, ♭A, Sh. [Shore ?]

Y. [Chart of open notes, from Mr Shore. *b*′♭, *f*″, *a*″ and *b*″♭ shown in dots and superscribed with an *f*, (*false*?)]

X16. BULLS COPPER TRUMPET
Length of 1st Yard, 2.0.4; 1st Crook 7.6; 2nd Yard, 1.11.0; 2nd Crook, 7.0; Pavillion (outside dia. 4.2; Garland 1.3), 2.0.6. [total] 7.3.0.

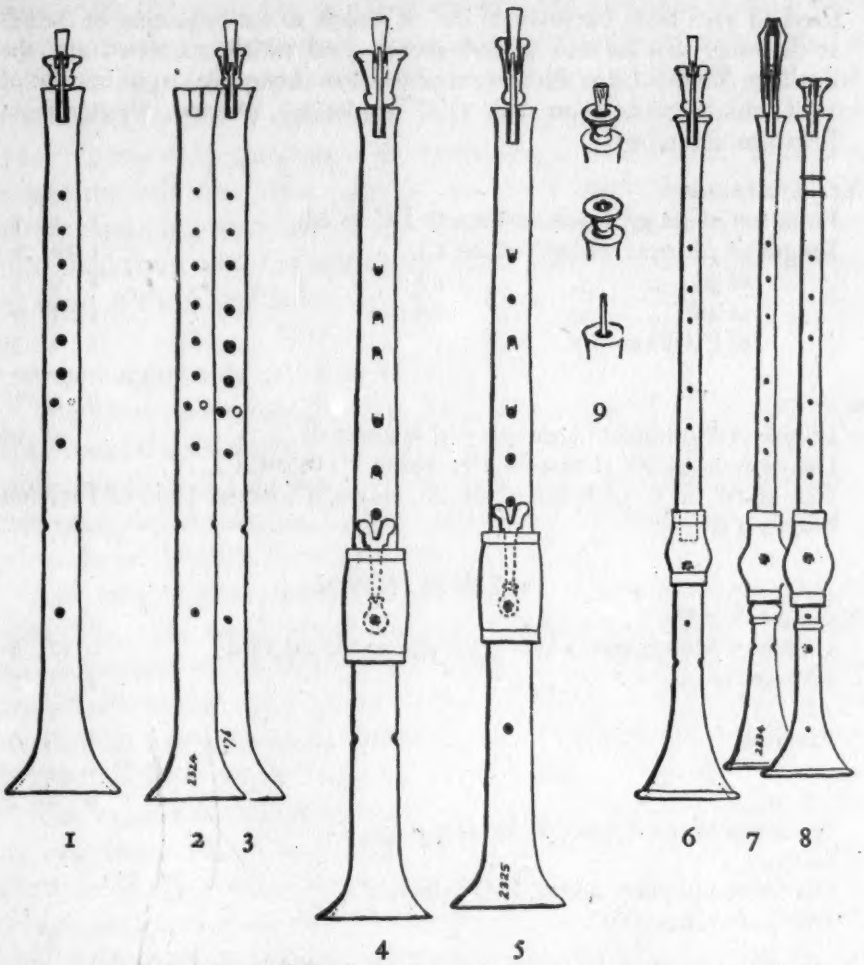


FIG. 1. Probable outlines of old English shawms, based upon the measurements in the Talbot MS, and compared with surviving specimens of similar dimensions. Reeds shown with the latter are in no case original

1. *English Hautbois or Waits*, treble; 2. Brussels Conservatoire 2324 (treble shawm); 3. Brussels Conservatoire 176 (treble shawm); 4. *English Hautbois or Waits*, tenor; 5. Brussels 2325 (tenor shawm, Altpommer); 6. *Schalmey*, treble; 7. Brussels 2334, with ivory cap enclosing reed; 8. Schalmey by Haka, Amsterdam; 9. Head of shawm, in playing order; without reed; and without reed and pirouette, showing the removable staple

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Z. FLAT TRUMPET.

In a Flat Trumpet the mouthpiece stands oblique towards right. 2d Crook placed near left Ear & by it you draw out the Inward yards, whereof one reaches to the Boss of the Pavillion, the other to the 1st Crook: its size with the yards shutt the same with common Trumpet.

The crook at one end is joynted to an additional yard which incloses the

fixed 2d yard from the joynt of the 1st Crook to the beginning of the 2d: at the other it is let into another shorter yard which is inserted into the Pavillion Yard as far as the bottom of the Boss. Longer yd from bottom of 1st Crook Garnish to its end, 23'2" besides 1+ covered. Shorter from [sentence unfinished].

X4. BOX TRUMPET

From top of 1st joynt whose Tennon 1'1" to 2d.	1	2	7
Length of 2d Joynt whose Tennon 1.1	1	10	0
of 3d " " " 1.½	1	9	3
of 4th " " " 1.⅝	1	1	0
of Pavillion	1	1	5
	7	0	7
Length of Mouthpiece (whereof 1'4" is inserted)		5	0½

Dia. of mouthpiece at mouth, 6"¼; within 2", below 3"¼.
Dia. of 1st, 2d & 3d Joynt, 4" of 4th, above, 4"; below 5"+; of Pavillion below, 3'5".

FRENCH HORN

X4. FRENCH HORN

Length of Mouthpiece which is joynted to the 1st yard	0	10	4
1st Joynt or yd,	3	1	5
2d. "	2	3	1
Pavillion	3	5	0
	9	8	2

From top of mouthpiece to small passage, 7".
Garland, 2'.
Dia. of mouthpiece, above, 6"¼; below, 2".
Dia. of Pavillion, 7'2".

Z. French Horn from 8f. to 16f. Bull's is 10f. with Mouthpiece entire.

The ample information concerning Bagpipes must be held over for lack of space.

REMARKS ON THE WIND INSTRUMENTS

From the linear dimensions of these one should be able to extract useful information regarding not only the pitches in use, but also the methods employed by Waits and other wind music. But the interpretation of Dr Talbot's figures is no simple matter. He does not say whether he took all the measurements himself, and indeed it looks as though two methods of measuring have been used, one being the normal one of measuring between hole centres, while the other reckons from the lower edge of one hole to the upper edge of the next below. If the wrong method is assumed by the investigator an error of as much as a whole tone in an instrument's deduced pitch may be the result.

In the case of the *English Hautbois* Talbot writes 'to the centre of the

first hole'. Certainly the centre-to-centre method seems to have been used with these instruments, since an edge-to-edge reading puts the 6th hole of the *Tenor Waits* underneath the barrel, which is absurd. On the other hand, centre-to-centre interpretation with the *French Hautbois* not only contradicts the stated length of the upper joint, but places the bell vent holes right on the lower tenon. I am here tentatively assuming that the *Waits* (and possibly the *Schalmey*) were measured from centre to centre, and all the other woodwind from edge to edge of the finger holes.

ENGLISH HAUTBOIS OR WAITS

These instruments appear to be none other than the old stoutly built shawms of the sixteenth century (see Praetorius, *Syntagma* II, Pl. XI 4), of which Brussels Conservatoire Museum Nos. 2324 and 176 are perfect examples. A third Brussels specimen is illustrated in Day, *Catalogue of the Royal Military Exhibition* (1890) Pl. III B.

Assuming centre-to-centre measuring, the *Treble Waits* is identical with No. 2324 which came from the Barbieri collection in Madrid and is marked MELCHOR. Now six fingers on all these instruments and in Praetorius, give *e'*. In Talbot's tablature it is *d'*, and this is backed by two authorities (including Mr Banister), who must have known all there was to know about shawms.

This raises a multitude of questions. Was the upwards transposition of one tone, which Praetorius stated to be necessary when using shawms (II 37) practised by the London waits? Or did they conform to a high organ pitch? (Schmidt's Hampton Court organ was a semitone and his Durham organ a tone above the concert pitch of the period.)

But if edge-to-edge measuring was practised at the Star and Garter in Swallow Street, the *Treble Waits* must have been a tone lower and therefore *not* transposing. However, an objection to this supposition in the case of the Tenor has already been mentioned.

The *Tenor Waits* is practically identical with Praetorius' *Altpommer* (Pl. XI 3) and Brussels No. 2325, again marked MELCHOR. In both these cases six fingers give *a*. The Frankfort Historical Museum possesses a specimen of the same kind but made in Talbot's day, by J. C. Denner.

We see under *French Hautbois* that the *Waits* resembled the *Great French Hautbois*. These must have been the old *dessus* and *taille d'Hautbois* which played in Louis XIII's '*Douze Grand Hautbois*', and were described by Mersenne. They, too, were the same treble and tenor shawms again, though Mersenne drew the treble without a *fliew* (pirouette).

SCHALMEY

The *Treble Schalmey* seems closely to resemble the slender baroque version of the shawm, which was still being made by Schlegel of Basle after 1713 (see Nef, *Catalogue of Basle Historical Museum*, 13). A good example of this design is an instrument by Haka of Amsterdam, formerly in the collection of Canon Galpin and illustrated in his *Old English Instruments* (Pl. XXXII 3). In addition to close agreement with Talbot's *Schalmey* over linear dimensions, it has the same very small finger holes, brass ring round the bell, and keyless 7th hole under the barrel (the present key is not original; Brussels No. 2334 shows another of the same type in its keyless condition). Six fingers on the Haka instrument give *c'* at the old pitch, which agrees with Talbot's tablature. Its tone is indeed '*sweeter than the* [English] *Hautbois*', and not unlike that of the oboe.

He omitted details of the *Tenor Schalmey*, but examples may be seen at Brussels. But he is the only known writer to distinguish between the two builds of shawms which we now see in museums.

FRENCH HAUTBOIS

This is the true oboe. No oboes or tenor oboes by Bressan are known. For John Ashbury, *Major Hautboy* to the Foot Guards and manufacturer of false teeth, see Lyndesay G. Langwill, *The Music Review*, VII, 88, where Ashbury's captivating trade card is reproduced.

Talbot mentions no crook for the tenor oboe, but perhaps with a reed as long as his oboe reed it would not require one. A crookless tenor by Gedney (mid-eighteenth century) is in the Boston Museum.

BASSOON

Three-keyed bassoon. The measurement of the tenor (fourth) joint seems to include its tenon.

If the *Double Basson* was a jointed instrument like the *Basson* (i.e. as opposed to the one-piece *Quart-Fagotte*, etc.) this is the earliest known record of a true bassoon deeper than the ordinary. It would have resembled the Double Bassoon in G by Samme, 1851 (R.C.M. Collection), also descending to *F'*.

DOUBLE COURTAUT

This is not a bassoon, as is the *Double Curtaille* described by Randle Holme (before 1688; see Langwill, *Musical Times*, April 1937), but the old two-keyed 'dulcian' or *Chorist-fagott*, made in one piece, descending to *C*, and still prominently featured in the works of Buchner, Speer and other German composers of that era.

There must be a mistake in Talbot's first three figures. Perhaps the first should read 2.10.6, and the *whole length of conveyance*, 6.0.5, which makes sense with the rest and with surviving specimens.

FLUTE D'ALLEMAGNE

Talbot's dimensions are here particularly hard to unravel, but cf Galpin, *Old English Instruments,* Pl. XXXI 2. The *little sound hole in the 1st joynt* requires explanation.

CORNET

A straight but not mute cornet (see Praetorius, Pl. VIII 8) pitched, according to the tablature, a third above the classic cornet pitch in which the bottom note was *a*. The Germans were still using the latter in Talbot's time (Speer, *Grund-richtiger Unterricht,* 1687), but a few French cornets among the surviving specimens seem to be built to the higher pitch, to which Talbot's dimensions roughly agree, though only at the 'concert' pitch (the German *Cammerton,* about a semitone below modern pitch).

BASS SACKBUTT

Crook here means U-bend; Mersenne called this *potence.* The *Separate Yard* is the whole bell joint. In the figure 3.2.3 Talbot has included the length of the slide a third time, so that his *length of instrt. at shortest* must be reduced to 11.10.4 or 142½ ins. He mentions a ratio of 8 : 11 to the Tenor Sackbut. This ratio (almost equal to the 3 : 4 of a perfect fourth) happens to be that existing between two natural trumpets crooked a fourth apart. Now 8/11 of 142½ is 103½, which is exactly the tube length of Canon Galpin's Tenor Sackbut (Neuschel, 1557), which stands in C nearly a semitone below modern pitch. Therefore Talbot's Bass was a fourth lower, i.e. in G at the concert pitch of his day.

But the presence of low Cs in the bass trombone parts of Hingston and Locke suggests (since Talbot mentions no crooks) that it may even so have been considered an F Bass, either because it was used with high pitch organs or because it played bass in wind bands which transposed a tone up automatically.

TRUMPETS

Bull would be William Bull, the most celebrated London maker of brass instruments of that time (see Langwill, *The Music Review,* VII, 89). There is a Bull trumpet in the London Museum and a horn in the Carse Memorial Collection at the Horniman Museum.

The *Flat Trumpet* has hitherto been a complete mystery, but Talbot's description shows that it was not unlike the common nineteenth-century English Slide Trumpet whose invention is attributed to Hyde, in 1804. Three Slide Trumpets exist bearing the name of John Harris of London (see Langwill, *op. cit.,* 91). Mr W. F. H. Blandford suggests that Harris may have been Bull's successor in business, but he con-

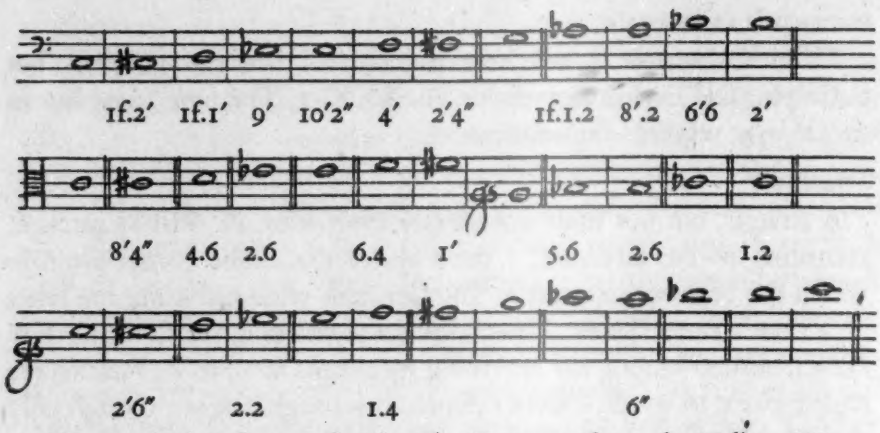



FIG. 2. Scale of notes for the Flat Trumpet from the Talbot MS

siders that the slides on these three trumpets are undoubtedly nineteenth-century additions.

With regard to its music, John Shore himself played *flat tunes made by Mr Finger* in 1691 (Grove, art. *Shore*), while in the British Museum (Harl. MS 7340, f. 521) is a *Full Anthem*—

> '. . . sung at the funerall solemnity of Queen Mary, 1694, accompanied with flat Mournfull Trumpets. Composed by Mr Henry Purcell; in honour to whose Memory the same composition was performed the year following, at his own funerall, in Westminster Abbey.'

The funeral marches used on the same occasion are printed and discussed by W. Barclay Squire in *SIMG*, IV (1904).

No sooner is the Flat Trumpet revealed than we are confronted with the mystery of the *Box Trumpet*. It was clearly made of boxwood because Talbot only used the word *tenon* in connection with the jointed woodwind. It has the same length of tubing as his common trumpet.

FRENCH HORN

The details are disappointingly meagre, though not without interest. 9 ft. 8¼ in. corresponds to about B flat alto, a pitch found in other horns of the late seventeenth century (see Carse, *Musical Wind Instruments*, 214). Wm. Bull's horn of 1699 (Carse Collection) is in E, modern pitch. But the words 'from 8 f. to 16 f.' confirm the evidence of scores that horns were even then available in a number of keys for use in the orchestra and band.

With these brief remarks and the expression of my indebtedness to Mr Donington and Mr Hiscock, I will leave Dr Talbot's wind instruments to the expert attention of the members of this Society, who with specialists' knowledge will, I hope, probe more deeply into the information offered by this remarkable document.

EARLY ORCHESTRAS: SOME CONTEMPORARY ACCOUNTS

I. Coryat's Crudities, London, W[illiam] S[tansby], 1611, pp. 249-52.

[*Thomas Coryat, born Odcombe, Somerset, about 1577; died Surat, India, December 1617. Traveller and eccentric, he spent six months touring Europe in 1608, and his quaint comments on what he saw and heard were published as 'Coryat's Crudities'. Here is reprinted all he has to say about musical instruments and performances, except for a few isolated and undetailed remarks on church organs.*]

I was at three very solemne feasts in Venice, I meane not commessations or banquets, but holy and religious solemnities, whereof the first was in the Church of certain Nunnes in St Laurence parish, which are dedicated to St Laurence. This was celebrated the one and thirtieth of July being Sunday, where I heard much singular musicke. The second was on the day of our Ladies assumption, which was the fifth of August being Fryday. . . . At that time I heard much good musicke in Saint Markes Church, but especially that of a treble violl which was so excellent that I thinke no man could surpasse it. Also there were sagbuts and cornets as at St Laurence feast which yeelded passing good musicke. The third feast was upon Saint Roches day being Saturday and the sixth day of August, where I heard the best musicke that ever I did in all my life both in the morning and the afternoone, so good that I would willingly goe an hundred miles a foote at any time to heare the like. . . . This feast consisted principally of Musicke, which was both vocall and instrumental, so good, so delectable, so rare, so admirable, so superexcellent, that it did even ravish and stupifie all those strangers that never heard the like. But how others were affected with it I know not; for mine owne part I can say this, that I was for the time even rapt up with Saint Paul into the third heaven. Sometimes there sang sixeteene or twenty men together, having their master or moderator to keepe them in order; and when they sung, the instrumentall musitians played also. Sometimes sixteene played together upon their instruments, ten Sagbuts, foure Cornets, and two Violdegambaes of an extraordinary greatness; sometimes tenne, sixe Sagbuts and foure Cornets; sometimes two, a Cornet and a treble violl. Of those treble viols I heard three severall there, whereof each was so good, especially one that I observed above the rest, that I never heard the like before. Those that played upon the treble viols, sung and played together, and sometimes two singular fellowes played together upon Theorboes, to which they sung also, who yeelded admirable sweet musicke, but so still that they could scarce be heard but by those that were very neare them. These two Theorbists concluded that nights musicke, which continued three whole howers at the least. For they beganne about five of the clocke, and ended not before eight. Also it continued as long in the morning: at every time that every severall musicke played, the Organs, whereof there are seven faire paire in that room, standing al in a row together, plaied with them.

A. R. McCLURE

Studies in Keyboard Temperaments

Bonum est in quod tendit appetitus—*St Thomas Aquinas*

INTRODUCTION

ALTHOUGH much has been written on the subject of temperaments, it is seldom that one can hear for oneself how different systems work out in practice. A hundred years ago opportunities of that sort must have been common, for it was not until the second half of the last century that English organ builders decided to adopt the equally-tempered system. But now that equal temperament has become the international usage, its merits have to be taken largely on trust since we have no other standard conveniently to hand against which to evaluate them. Yet for several reasons it would be an advantage to review the verdict of our Victorian ancestors that this form of fixed tuning was the best all-round arrangement for the needs of the art, namely, the reproduction of existing music and the invention of new.

Certainly a strong case can be made out in its favour. Long experience has decided that a keyboard octave of twelve notes fits better than any other into the human pair of hands and that, of all methods of tuning such a series, equal temperament gives by far the widest range of keys. On the other hand, history suggests that the raw ingredients of melody and harmony, although relatively stable, are in the long run subject to evolutionary changes; also that some of the most interesting developments in composition were bound up with developments of one sort or another in conventional media.

It is not inconceivable, therefore, that in their turn the twelve semitones of the tempered octave may presently show the wear and tear of three-and-a-half centuries; and modern experiments in microtones, with instruments to match, foreshadow the possibility. Again, we live at a time of great technical achievements in sound-production, and the problems of enlarging our mechanical resources are by no means so formidable as they would have been a century or two ago: indeed, if music is to reflect the period to which it belongs, it could hardly do so more typically than by the imaginative handling of a modernized equipment.

We must admit, of course, that from the artist's point of view the

latest mechanical innovations leave much to be desired, chiefly because they aim at synthetic imitations of what was there before—as, for example, in the radio, the gramophone and the electric organ. But these are jobs in which the engineer was guided by his own lights. One can hardly doubt that, given a lead from the aesthetic side, modern industry could give composers instruments of quite unpredictable value, since our normal method of tuning the scale is only one of many, and by no means the most harmonious.

With these considerations in mind the writer, for his own amusement, determined to try out various types of tunings, well-known to theorists but unfamiliar to modern ears, and the results recorded below are the reactions of a random sample of the music-loving public to standard work, played under these altered conditions.

Although all opinions, even those of popular entertainers, were respected, the sample was to a certain extent biased in that it included more than the average proportion of amateurs of Elizabethan music.

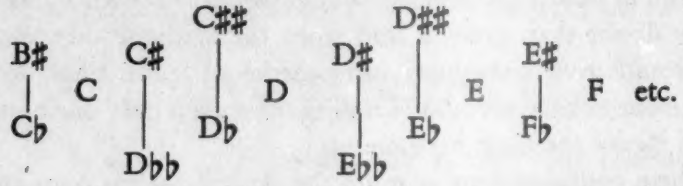
I THE 19-NOTE CYCLE

About eighteen years ago, I noticed a way of tuning the scale which, as it turned out, had often been described before. If the octave were graduated into nineteen small units instead of the usual twelve, the resulting notes would fit equally well into the structure of diatonic theory. Putting one of these unit divisions to represent the chromatic and two the diatonic semitone, one gets the whole-tone split into three equal parts and a gamut arranged as follows, in which every symbol stands for a separate degree of pitch:

C C♯ D♭ D D♯ E♭ E E♯ F F♯ G♭ G G♯ A♭ A B♭ B C♭ C′

In terms of the keyboard this means seven white notes plus twelve accidentals, each of the normal black notes being doubled and others inserted in the gaps E–F; B–C (the 'semi-oder semitonia' of Praetorius). By undoing the compromise between sharps and flats, the arrangement would involve some changes in the performer's routine. Players would require to take as much care in choosing accidentals on the instrument as composers do on paper. For instance, the triads E–A♭–B or E♭–G♯–C, which sound like common chords on the ordinary pianoforte, would actually become dissonant, as theory assumes them to be. And, while string players have always claimed to separate sharps from flats, one would have to explain why the violinist thinks of, say, E♭ as vaguely flatter than D♯, and of E♯ as vaguely sharper than F, whereas the nineteen-note system reverses the order, making the chromatic semitone D–D♯ only half the size of the diatonic semitone D♯–E.

New positions would also be found for the remote accidentals, double sharps and flats being enharmonic with *black* notes in this fashion:



Enharmonic modulations would, therefore, behave differently. In moving, for instance, from the chord of F♯ to that of G♭, there would be a wholesale rise of pitch, amounting to the third of a tone: if you wanted imperceptible transitions you must plod through the sharp keys, say to D♯ and then call it E♭♭. That is to say, our normal cycle of twelve related keys would widen to nineteen.

In theory, here was a most logical revision of the composer's harmonic materials. Obviously the permutations and combinations of nineteen distinct sounds must be vastly greater than those of twelve, and one of the many advantages over the proposed quarter-tone system was that the extra notes were already accounted for in diatonic notation. As it happened, Joseph Yasser[1] was then publishing his learned treatise on Evolving Tonality, in which he predicted that the nineteen-note cycle would supply the scales of the future. I therefore began to visualize some of the practical stages on the way to such a destination. Makers would be required to design new instruments, composers to write special music for them, players to learn new methods of performance —and then listeners persuaded to enjoy the results.

For a start it would be an inducement to have a keyboard on which one could play without special instruction. Why, then, not begin with an ordinary clavier and make it available to play, not all the nineteen notes at once, but selected and easily-variable combinations of twelve at a time? Complications could be added when the demand arose. There was no difficulty in planning a switch-mechanisim to allow of rapid changes of scale during the course of a movement, just as an organist would vary his stops or a harpist rearrange his pedals—a scheme which Robert Smith[2] had foreshadowed two hundred years earlier. With such an arrangement, music in any key could be played from normal notation in much the usual way, and, in addition, composers would have means for creating harmonic flavours previously unobtainable.

With the idea of sampling those flavours, I had an ordinary pianoforte retuned to give twelve notes of Yasser's gamut, choosing middle

notes of the diatonic sequence of fifths, i.e. seven naturals and the five accidentals of modal music:

E♭ B♭ . . . F♯ C♯ G♯

This fraction of an instrument allowed the use of six major and three minor keys—the same limited range afforded by the uncompromised mean-tone claviers of the seventeenth century. Thus, while the pianoforte could deal with most music from that period backwards it could play comparatively little from the time of Bach onwards. For the purpose of excluding experimental errors, however, I had the remaining seven accidentals tuned for a time on an auxiliary pianoforte, so that two performers, distributing the written notes between them, might play in any key whatever. The results agreed with calculation. The whole gamut had been evenly tuned: one could drive laboriously round a circle of nineteen keys, and the enharmonic changes behaved according to plan. Then the second piano was brought back to equal temperament to provide a standard of comparison.

In preparation for our first experiment, the tuner and I set out, rather rashly, as it proved, to set the twelve notes from Yasser's series directly on to a pianoforte, using the trial-and-error method of tempering ascending fifths and descending fourths, until everything agreed with the formula. It took nearly four hours to get a good first approximation. For a scientific description of normal procedure the reader can be recommended to Dr Alex Wood's *The Physics of Music* and for data on various temperaments to Helmholtz's *Sensations of Tone*.

The basic principle of keyboard tuning is well-known. Taking a series of fifths ascending through seven octaves:

A♭ E♭ E♭ F C G D A E B F♯ C♯ G♯

we get a musical framework which supplies, among other things, ten major sixths and nine major thirds. In practice however, if we tune all these fifths dead true, on a pianoforte, the thirds and sixths become unbearably sharp for consonant harmony while the G♯ is appreciably sharper than the corresponding A♭, the calculated difference being about a quarter-semitone. The tuner's art therefore consists in smoothing these discrepancies to satisfy taste, custom and convenience, the laws of music making no hard-and-fast stipulation as to how this must be done, and the laws of science having no infallible rule for settling what the ear will accept as perfection. The only certainties are that some or all of the fifths must be narrowed a shade, and that if a scale is to sound the same in all keys the narrowing must be evenly spread throughout the series.

It is not difficult to realize that if you keep one of the middle notes, say C, constant, and gradually compress the sequence, concertina-fashion from both ends, the flat notes will rise and the sharps fall in pitch. Soon a point will come when the G♯ is exactly in tune with the A♭: that gives the ordinary equal temperament. With the traditional mean-tone system the flattening continued until the G♯ was about one fifth of a tone below the position of A♭,

and with Yasser's 19-tone cycle it goes on until the gap widens to one third of a tone (Figure 2). It should be said that in order to set one octave at a time the tuner replaces the sequence of fifths by alternate rising fifths and descending fourths, bearing in mind that narrowing a given interval correspondingly widens its inversion, provided that the octaves are true.

Figure 1 illustrates how the thirds and sixths are affected by progressively and scientifically flattening the fifths. The audible roughness, expressed in beats per second, is calculated for $c'=261$: an octave higher the rates are doubled, the beat-frequency increasing in geometrical proportion as you ascend the scale. Since few tuners have the skill or patience for experiments of this kind, I afterwards found it much easier to tune an octave of harmonium reeds to serve as a master-pattern. Curiously enough, my excellent tuner was rather critical of my tempering, although it was based on scientific rules and the accurate counting of beats. It seems that these highly accomplished craftsmen go by experience rather than by the book and that in their efforts to please they arrive at results which do not always correspond with strict theory. I should not be surprised if the empirical method, in expert hands, were found to give, if anything, the better results: at all events it paid to leave the tuner alone when the finishing touches were being put on the pianoforte.

As we soon discovered by trial, the fifths in Yasser's temperament were as rough as a moderate ear could stand—the rate of beating being three-and-a-half times faster than usual. The resulting sixths, being to all intents dead true, supplied landmarks against which to check our trial bearings. Thus the sequence C–G–D–A was in order when C–A ceased to beat and the roughness of the fourth and fifths was evenly distributed. Once the piano had settled down, and the tuner had memorized its peculiarities, it needed no more attention than a normal instrument. Routine visits every four months kept it in excellent order for fifteen years, during which time it became a kind of domestic curiosity about which dozens of people, experienced and inexperienced, gave their candid opinions.

Yasser's speculations on the evolution of music led him to conclude that the diatonic scale of seven tones plus five accidentals would, in time, give place to a supra-diatonic scale of twelve tones plus seven accidentals. Then, on certain premises of his own and from assumptions of physical theorists, he developed, by most ingenious logic, a fanciful scheme, with fresh notation and terminology, designed to serve the needs of composers in the future—the detailed plan of a hypothetical new order.

Composers of the future not being readily available, any practical demonstration of such a new order was out of the question. We could only test, by the means at our disposal, how passages of existing music were affected by the tuning adopted.

Starting with a bias in its favour, I was disappointed to find no one who shared my enthusiasm for the nineteen-note octave, tried under these conditions: interest, perhaps, but certainly no affection. On the

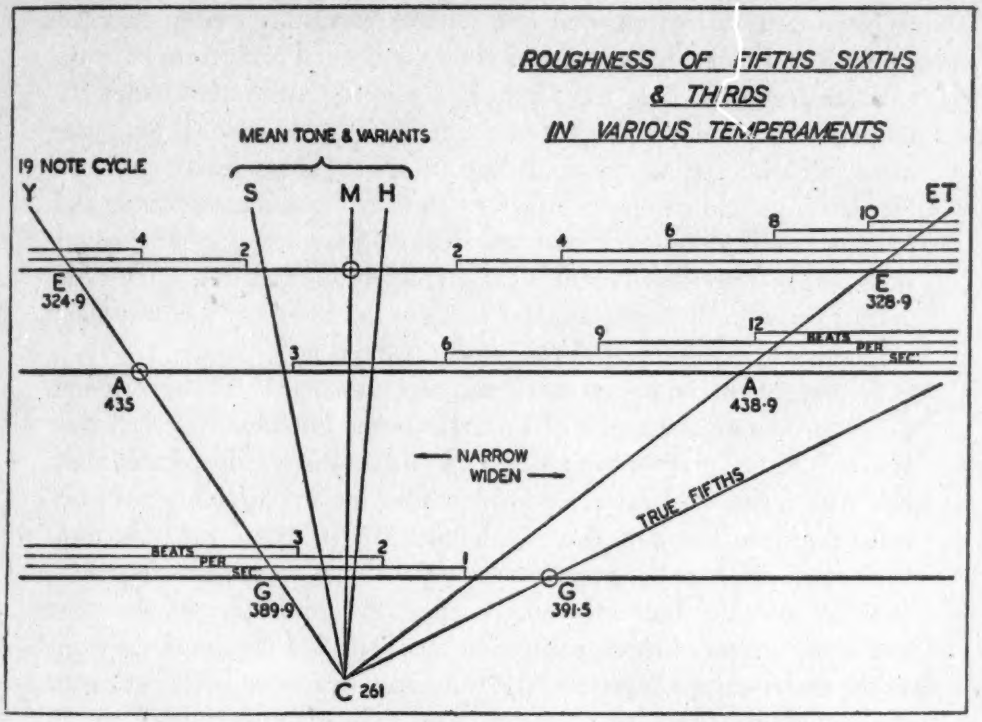


FIG 1. To illustrate how a progressive narrowing of keyboard fifths alters the purity of major thirds and sixths. Calculated for a fundamental frequency of 261, the errors are expressed in beats per second (a watch ticks five times a second). Pure intervals (fifth 2:3-sixth 3:5-third 4:5) are marked with a circle. On the diagram are shown these cyclic temperaments (number of divisions per octave given in brackets):

ET (normal piano)	(12)	Y (Yasser and others)	(19)
H (Huygens)	(31)	S (R. Smith)	(50)

M (mean-tone: pure thirds)

According to Ellis, Y also represents Salinas' mean-tone tuning and S Zarlino's. See Helmholtz, *Sensations of Tone* (2nd English edn. 1912) p.548.

other hand, the average person with a musical ear could be deluded for a time into thinking that this was an ordinary pianoforte, so long as one avoided the 'wolf-notes' produced by false accidentals. I should say, therefore, that a generation, starting afresh, could tolerate this tuning as readily as we tolerate equal temperament; but that it would need very strong inducement to make people voluntarily leave the one for the other.

On the theoretical side there were many points of interest, for the

nineteen-note system allowed one actually to distinguish augmented intervals and their inversions, which on the normal pianoforte have no separate existence. Thus the augmented second on the minor scale no longer sounded like a rough minor third, as it does in equal temperament, nor the augmented sixth like an approximate minor seventh. Similarly, instead of one complex to serve for dominant seventh and German sixth alike, you had two distinct flavours: on one hand a surprisingly smooth German sixth (representing the frequency-ratio 4:5:6:7) and on the other a surprisingly rough chord of the dominant seventh, with no trace of the sentimental about it.

Singers on the whole favoured accompaniments on this instrument, possibly because my range of available music included so much that was old. String players were inclined to be hostile, partly because they like true fifths, whereas mine bordered on the unpleasant, partly because the intonation completely upset their fingering and partly because their repertory was relatively more modern than that of the singers.

There was no doubt that the change of tuning affected different species or genera of music somewhat differently. With simple passages in the major-minor key-system, it was hard to prove either loss or gain by comparison with equal temperament, since modern ears are so thoroughly conditioned to the latter. Chromatic music in nineteenth and twentieth century idioms, conceived in the atmosphere of modern tonality, certainly suffered from being taken out of its normal medium (so far as our clumsy two-piano technique enabled us to judge). On the other hand (as I am told Yasser himself predicted) the nineteen-note scale partly restored something that equal temperament takes away from music in the Elizabethan tradition. This was noted many times, especially by madrigal singers, but not, as a rule, until the same passage was repeated on a normal pianoforte.

Assuming that this was a fair experiment, two deductions follow. First: that the resistance to Yasser's scale would probably be even greater than the resistance to equal temperament at its beginnings, since without special charm of its own, the new tuning could only become a success when music expressly designed for it became more interesting than the music which we can hear now. Second: that the strongest opposition could be expected from the string players. We have seen that in many ways the two scales lie at opposite extremes of tolerance. Consequently, in switching from one to the other, singers and instrumentalists would have to make the maximum readjustments of ear and of technique—easy perhaps in the course of generations, but impossibly hard if old and new music followed each other in the same programme.

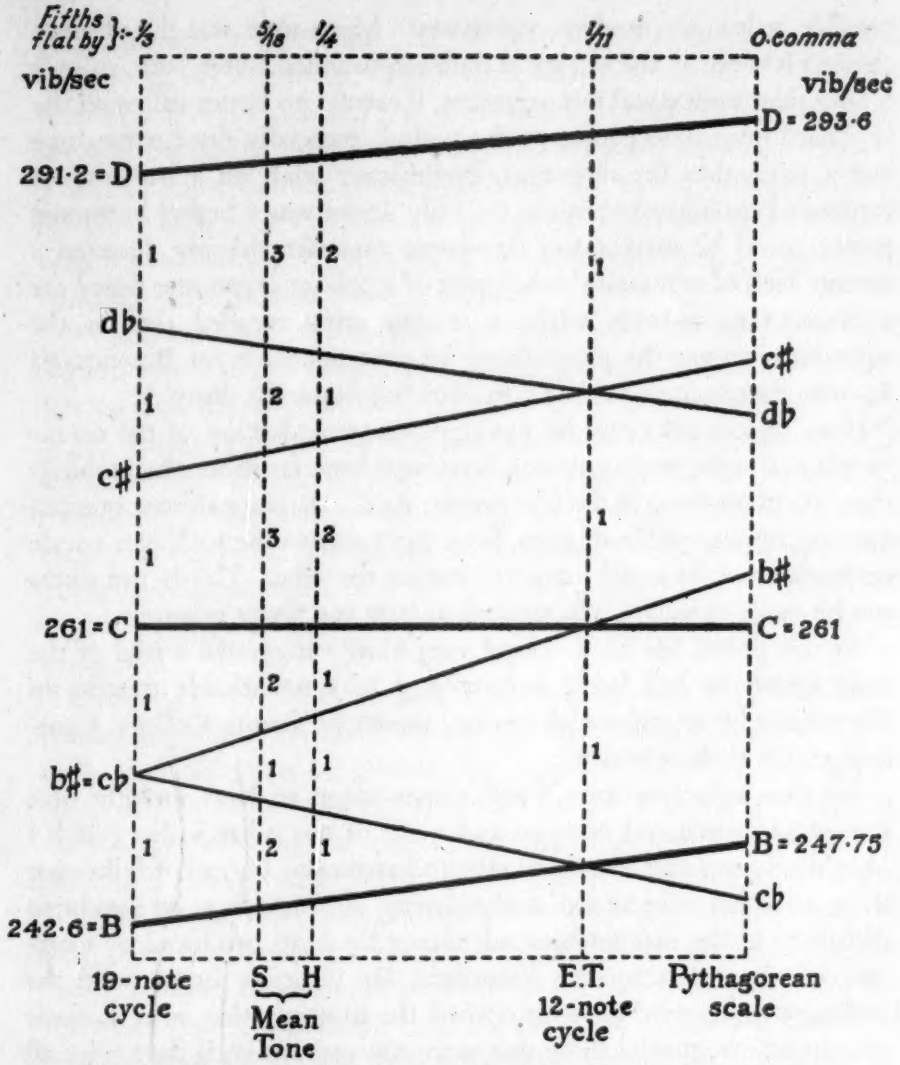


FIG 2. To illustrate the changing relationships of tone: diatonic semitone: chromatic semitone with the different temperaments shown in Fig. 1. The comma used in this figure is the syntonic comma, 81 : 80, which is rather more than one-fifth of an equal-temperament semitone.

II MEAN TONE AND ALLIED TEMPERAMENTS

Yasser, in an addendum to his book, visualized a complete break with the past and a re-education of the young to his new order. But surely the arts move by persuasion rather than by force? Even assuming that his long-term prophecies are not wide of the mark, would not his leap be too much for evolution to take in a single stride?

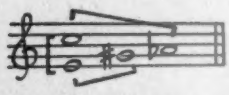
It seemed worth while, therefore, to review other temperaments lying between the two extremes and estimate (*a*) their attractiveness to the ear, (*b*) the problems of putting them into execution and (*c*) their

possible value to modern composers. Mean-tone was the obvious choice.[3] If music in the old vocal tradition sounded better with Yasser's tuning than with equal temperament, it should go better still with the keyboard intonation proper to the period, especially since mean-tone had a reputation for sweetness. Preliminary trials on a harmonium confirmed traditional opinion: the only doubt was whether harmonic purity could be carried too far—some musicians having detected a certain 'lack of animation' when part of a college organ was tuned for a time to mean-tone, while a famous critic recalled that in the eighteen-seventies the progressions of pure concords on Bosanquet's 84-note harmonium sounded to him 'unpleasantly slimy'.[4]

If so, that could easily be put right. Keyboard scales of the seventeenth and eighteenth centuries must have been far more elastic things than the mean-tone of the text-books. As the diagram shows, one can pass, by imperceptible degrees, from strict mean-tone to Yasser's scale on one side or to equal temperament on the other. Thirds and sixths can be made as rough or as smooth as taste and fancy require.

At this point, Mr Ll. S. Lloyd very kindly suggested a trial of the scale which he had lately rediscovered in a remarkable treatise on Harmonics by an eighteenth century master of Trinity College, Cambridge, Dr Robert Smith.[5]

No one before or since Smith's time seems to have thought of a theory so simple and obvious and none of the other scales which I have tried gives such clean and vibrant harmonies. Instead of following those scientists who aimed at eliminating all mistuning, he sought to distribute to the best aesthetic advantage the beats produced by intervals which were minutely discordant. He therefore began with the ordinary mean-tone scale, smoothed the intervals that were a shade rough and roughened those that were too smooth until they were all of the same order of roughness and just inaccurate enough to sparkle with life.

Robert Smith's scale, marked S in Figure 1, makes the relative widths of tone: diatonic semitone: chromatic semitone 8:5:3 as against 3:2:1 in Yasser's scale, or 2:1:1 in equal temperament (see Figure 2). The distance between adjacent sharps and flats is thus a species of natural quarter-tone, approximating to the discord produced by perfect voices singing, for example

I therefore wiped Yasser's tuning off the pianoforte and substituted Smith's, to everyone's great pleasure. It escaped the crudities of equal

temperament on one hand and of the 19-note cycle on the other, while its faintly impure thirds gave the touch of animation which mean-tone was reported to lack. The difference showed most on the reedy tones of the harmonium, but even on modern pianoforte-tone, with its deadened upper partials, it was sufficiently obvious. The reception was the more unexpected because the instrument, the tuner and I were all quite unused to this delicate form of intonation, so that our tuning must have fallen rather short of the ideal.

As yet I have only first impressions to record. The three professional tuners, who disliked Yasser's scale, were fascinated by this one. There was no need to contrast it with a normal pianoforte to realize its good points: memory sufficed for the comparison. More than one musician remarked that it agreed better than anything he had heard with the impression of the diatonic scale which lay at the back of his mind: a teacher of the violin at a college of music closed his eyes 'as he always did on hearing anything he really liked', while singers, especially those used to madrigals, agreed that it was remarkably comfortable for the voice.

Compared with the lukewarm response to my first experiment, this willing acceptance of Smith's variant of mean-tone raised the matter of its possible value to present-day musicians. Did not his system deserve to be revived and revalued with the aid of modern resource in the mechanical design of instruments? Its virtue, as we proved, was inherent charm; its weakness, either a severely cramped range of modulation or else a more complicated instrument than we use now. If, then, the musical world ever agreed to enlarge its mechanical instruments, how would extended mean-tone compare with possible rivals?

By modern standards, the fatal objections to mean-tone and allied temperaments are (1) that they provide no smooth cycle of keys: the series being a linear one, you must be prepared for a slight jolt on jumping from extreme sharps to extreme flats, (2) that a separate sound is needed for every note of the stave: there are no enharmonic equivalents. In order, therefore, to cope with the whole range of nineteenth and twentieth century music, something like a 31-note octave such as was provided by the *Cyclus Harmonicus* of Huygens would be indicated (i.e. seven naturals, seven sharps, seven flats and five apiece of the double accidentals).

Robert Smith's experiments involved a 24-note harpsichord, that is to say the range of a modern quarter-tone piano retuned to cover eighteen keys in his convention. Let us consider a simpler innovation, viz. a 19-note octave of seven naturals, six sharps and six flats—the idea described at the beginning of this paper, but tuned to Smith's scale in-

stead of Yasser's, in fact, almost the identical scheme embodied in the *Clavicembalum Universale*.[6]

Beyond question, such an instrument would delight amateurs of old music; it could deal quite comfortably with works of the pre-classical period, not only in their original keys but also in transcriptions by modern arrangers. Those who have actually heard Smith's scale agree that it brings out unexpected beauties in the older idioms, to which modern ears are quite unused. One can accompany Elizabethan madrigals and motets without that sense of incongruity provoked by the equally-tempered pianoforte. A similar advantage was noticed in chromatic passages from Purcell, but not in much later work so far as we could tell.

Music of the eighteenth century would demand at least Smith's range of twenty-four notes to the octave. The result, I am sure, would be acceptable, but I cannot prophesy whether, on the whole, there would be much aesthetic gain. So far as my experience goes, music of the more recent past, say from Chopin onwards, would go much better on an ordinary instrument. Mean-tone, I fancy, would spoil it. Finally, supposing that a 19-note instrument tuned in the traditional way did become available, what kind of effective new music would it be capable of breeding?

Since that is the composer's affair, I do not venture beyond a few general ideas suggested by a technical study of the raw materials. Let us compare some of the resources obtainable on different types of keyboard instrument:

	ACTUAL VARIETY					
	Diatonic keys		Common chords		Natural dissonances	
	major	*minor*	*major*	*minor*	*aug. 2nd* (ratio 6:7)	*aug. 6th* (ratio 4:7)
12-note clavier						
mean-tone	6	3	8	8	3	2
eq. tempt.	12	12	12	12	—	—
19-note clavier						
mean-tone (universal clavicembalum)	13	10	15	15	10	9
eq. tempt. (Yasser's cycle)	19	19	19	19	19	19
NOMINAL OR IMPLIED VARIETY (using 31 written notes from G𝄫 to A𝄪)						
Equal Temperament 12-note, 19-note (Yasser)	25	22	27	27	22	21

It will be seen that the 19-note mean-tone instrument contains the materials for nearly twice as many common chords as the conventional instruments provided. It contains six more than the ordinary piano does, and of superior quality at that. It yields also a very fine array of natural dissonances, which have to be heard to be appreciated.

On the debit side, the enharmonic equivalents attainable with equal temperament, are completely ruled out. Music containing remote accidentals is simply unplayable, since by no feat of persuasion could a listener be convinced that C♮ was either B♯ or D♭♭. In other words, the actual variety of sounds is raised to nineteen from twelve, but the nominal variety reduced to nineteen from thirty-one.

It follows, therefore, that on such an instrument the modern technique of impressionism would fail to work—that is to say the knack of making a few fixed sounds appear to move over a wide range, now B♯, now C♮ and now D♭♭. In order to create the perfect illusion, two things are obviously prerequisite, (1) a reasonably true standard of the diatonic scale established in the hearer's mind and (2) a compromised or ambiguous scale of tones on the instrument. Upset either, and the illusion starts to fade.

That must be happening, even now, to the styles of last century, because the popular mind is becoming adapted to music which owes no allegiance to the past, and which treats the tempered chromatic scale as a mathematical series in its own right, without diatonic associations. Lose your traditional values, forget the diatonic scale and you impoverish your medium as a vehicle for suggestion. The other way of killing the illusion is to put truer scales on your instrument. Once sharps and flats become demonstrably different the ambiguity vanishes, and the trick of conjuring one into the other becomes not only impracticable but aesthetically dishonest in that medium.

Thus, in the handling of an extended mean-tone keyboard, composers would have to sacrifice rules of construction which, in the nineteenth century, were both legitimate and desirable. But once the feel of the new scale had been acquired, a new logic and grammar of construction would surely follow, particularly with regard to the wide range of interesting dissonances uncovered by the different style of tuning. And whereas Yasser's scheme envisages an entirely revolutionary and synthetic style of harmonic architecture, modernized mean-tone, with its prototypes in music of the pre-classical masters, could preserve a traditional succession and traditional standards of beauty. These are admittedly the highly speculative opinions of a layman, but they agree very well, so far, with experimental findings, that relatively modern music goes badly with tunings other than equal temperament,

stead of Yasser's, in fact, almost the identical scheme embodied in the *Clavicembalum Universale*.[6]

Beyond question, such an instrument would delight amateurs of old music; it could deal quite comfortably with works of the pre-classical period, not only in their original keys but also in transcriptions by modern arrangers. Those who have actually heard Smith's scale agree that it brings out unexpected beauties in the older idioms, to which modern ears are quite unused. One can accompany Elizabethan madrigals and motets without that sense of incongruity provoked by the equally-tempered pianoforte. A similar advantage was noticed in chromatic passages from Purcell, but not in much later work so far as we could tell.

Music of the eighteenth century would demand at least Smith's range of twenty-four notes to the octave. The result, I am sure, would be acceptable, but I cannot prophesy whether, on the whole, there would be much aesthetic gain. So far as my experience goes, music of the more recent past, say from Chopin onwards, would go much better on an ordinary instrument. Mean-tone, I fancy, would spoil it. Finally, supposing that a 19-note instrument tuned in the traditional way did become available, what kind of effective new music would it be capable of breeding?

Since that is the composer's affair, I do not venture beyond a few general ideas suggested by a technical study of the raw materials. Let us compare some of the resources obtainable on different types of keyboard instrument:

	ACTUAL VARIETY					
	Diatonic keys		Common chords		Natural dissonances	
	major	*minor*	*major*	*minor*	*aug. 2nd* (ratio 6:7)	*aug. 6th* (ratio 4:7)
12-note clavier						
mean-tone	6	3	8	8	3	2
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whereas old music, on the whole, goes better when sharps are differentiated from flats.

NOTES

[1] J. Yasser, *A Theory of Evolving Tonality* (1932).

[2] R. Smith, *Harmonics* (2nd ed. 1758).

[3] Ll. S. Lloyd, 'The Lesson of Mean-Tone Tuning', *The Music Review* V, p. 214.

[4] Mr Henry Willis and Mr Bernard Shaw: personal communications. The former kindly adds: 'When I tried the Father Smith positif at Trinity College, Cambridge, Dr Alan Gray was quite delighted with the smoothness of the tuning . . . and would, I think, have retained that tuning as a curiosity if nothing else—but as he wanted to use the section with the main organ, it had to be retuned to normal equal temperament.'

[5] See *Philosophical Magazine* (Series 7), XXXIV, Sept. 1943, p. 624.

[6] M. Praetorius, in his *Syntagma Musicum* (1619) II, 40, mentions a number of instruments in which all the accidentals were doubled to permit of a wide range of modulation in all three genera, diatonic, chromatic and enharmonic. From personal experience he described a 19-note clavicembalum, made in Vienna thirty years before and shown to him by the court organist at Prague. It was tuned (apparently in mean-tone) to the series of notes given in section I above, with the substitution of B♯ for C♭.

He pointed out that smooth-toned viols and lutes could bear tuning on the lines of equal temperament, partly because the difference between chromatic and diatonic semitones was less evident with these qualities of tone and partly because the player's finger on the frets could make minor adjustments of pitch. With compromised lute-tuning, however, he found that chromatic music lost some of its clarity and that voices, especially those of Greek singers, were at their best when accompanied on one of those enlarged keyboard-instruments—'ein Instrumentum perfectum si non perfectissimum'.

The writer wishes to record his great indebtedness to Mr Ll. S. Lloyd for generous help and criticism in the preparation of this paper, also his thanks to many friends and correspondents, including Professor W. K. Stanton for interest and encouragement, to the Warden of St Michael's, Tenbury (the Rev Noel Kemp-Welch) and Professor Sidney Newman for library facilities and to a professional tuner, Mr Cooper of Shrewsbury.

ERIC HALFPENNY

A Note on the Genealogy of the Double Bass

EVER since Arnold Dolmetsch first put out the idea in *The Interpretation of the Music of the Seventeenth and Eighteenth Centuries* (1915) it has been customary to refer to the double bass of the violin family as though it were a lame duck of extremely doubtful parentage. It has, for instance, been glibly suggested that it is a debased violone; that it should be fretted; that it is still bowed viol-fashion in some countries; that its flat back, sloping shoulders, fourth-tuning and certain other features are a sign-manual of its lost nobility as a member of the viol family; that its tone is coarse and that it habitually plays out of tune.

Setting aside the remarkable fact that so defective an instrument should have survived—for whatever faults may be found with the musical developments of the past hundred and fifty years, instrumental inefficiency is not one of them—it becomes very necessary to answer these charges, if they are not to become part of a new heresy, to be repeated, *ad nauseam*, in text-books yet unborn.

FORM. The double bass is not, and was never at any time, a modified violone. The main proportions have not varied for three centuries. Early Italian basses still in use in our orchestras all have the body length and average size which is now familiar, and which is sometimes referred to as 'three-quarter', to distinguish it from the really large basses which sometimes find their way into museums. This smaller size has been related by Bessaraboff[1] with the dimensions of Praetorius' *Gross Viol-de-Gamba Bass*, but the comparison is really no proof that the double bass is a descendant therefrom. An instrument which has to be as large as possible, consistent with utility, is not likely to vary much from the limits of the human capacity for handling it. These three-quarter basses are manifestly *not* violoni which have suffered conversion; not only are they, so far as one can judge from the rather sketchy descriptions furnished by those who profess to know, too large, but they exhibit the usual and unmistakable characteristics of the violin family—the swell back, out-turned corners, *f*-holes and scroll. The peg boxes rarely show signs of having accommodated more than three strings, in their original state. Of these features, the out-turned corners are interesting, for they are difficult to make in a rib nine inches deep,

and must represent a deliberate desire to preserve the violin outline. Very few old double basses of viol shape survive, and these always have *f*-holes, and sometimes the swell back. Otherwise this pattern only appears in cheap instruments dating from the nineteenth century onwards.

The passing of the swell back is quite unnecessarily lamented by Bessaraboff,[2] who apparently regards the flat back as an obstacle to precise classification. Nevertheless, the substitution of the flat back was, equally from the point of view of construction, tone, and the comfort of the player, an eminently sensible modification. The swell back absorbs an enormous quantity of valuable hardwood and invites herculean labour in the working of its thicknesses. Being of such wide area, it must be left thick enough at the centre to support the soundpost without distortion. Such a thickness is rather more than the constitution of the double bass requires, making the instrument inordinately heavy and fatiguing to handle, and 'close' in tone. The swell back, moreover, throws out the playing position, as it is inclined to obstruct the body of the player.

The flat back can be worked thin with ease and safety, since it is barred to take the soundpost in any case. It makes the instrument light and easy to play and responsive in tone.

For the same reason, the sloping shoulders and cutaway back are almost universal, and are equally necessary to playing comfort. No one who has had the misfortune to play on a bass of pure violin form, with tangental shoulders and a straight swell back, is likely to cherish the recollection. It is worth observing that these features, although claimed exclusively for the viols, are the only sensible form for any instrument which has to be played in this position. The 'cello alone is able to dispense with them, and that is because the relative position of the player to the instrument is different; for the 'cello is always canted backwards at a marked angle, and supported on an end pin. The quasi-pyramidal form of the top is not, therefore essentially a type-characteristic of the viols, but is part of the rationale of any vertically held instrument.

TUNING. The fourth-tuning of the bass, although by no means universal, is also a manipulative expedient. The speaking length of the double bass string is 42–42½ inches, and in the lower positions the diatonic tone-interval along the string is only covered by the span of the outstretched first and fourth finger. In order to bridge the gap between the strings without shifting the hand, the fourth-tuning is essential. The

expedient is justified by the normal configurations of foundation-basses of all ages.[3]

STRINGS. Most bassists string their instruments as thinly as they dare. The strings are then comparatively slack, and a high camber is necessary on the bridge in consequence. The addition of more strings means that this camber has to be distributed between them, since there are limits to the curve which can be put on the bridge. There is then less clearance between the strings, and the only way to obviate the chance of the bow touching an unwanted string, is to put on thicker strings all through. This overweights the bridge, as do the additional strings, and there is a marked deterioration of tone quality and responsiveness. There are very few successful five-string conversions in existence. Such an instrument needs to be specially built, and then barely justifies its existence. In these very low regions of the orchestra, timbre and 'body' are of more importance than pitch, as Schubert understood very well when he wrote the opening bars of the 'Unfinished' symphony.

The string thicknesses used by the writer are as follows:

G (1st)	·085″
D (2nd)	·115″
A (3rd)	·093″
E (4th)	·15″

These are not thick strings. The E string, though little more than an eighth of an inch, is slightly over size, otherwise they represent the minimum required to energize the plates, body and air-space of a particular instrument, *as a violin.*

NECK. The double bass, as evidenced by surviving specimens, was not at any time built with a neck block sufficiently wide to take the wide, flat neck of the violone. On the contrary, most basses are so narrow at the top of the ribs that they only just receive a four-string neck. The vast majority of basses made up to the middle of the nineteenth century were originally built for only three strings.

The D-section neck of the violin family, which is necessary for strength owing to the narrowness of the fingerboard, is quite unsuitable for use with frets, which indeed are only essential on flat-necked multi-strung instruments of whatever period for the express purpose of fingering chords on them.[4] They may be necessary on the violone in order to match up the timbre with that of the other viols, but are otherwise functionless on an instrument of such depth. In any case, the technique of the violin family, including the double bass, cannot now

admit the use of frets. If orchestral string parts were still confined to the medium-range polyphony of the 'Golden Age', all would be well enough; but to suggest the fretting of the double bass in the light of modern symphonic writing for that instrument, argues an ignorance of the practical facts, which is, to say the least, other-worldly.

BOW. One of the greatest mistakes which have been made regarding the instrument is that which concerns the old 'Dragonetti' bow, which survives in a slightly modified form in the modern German bow usually named after Simandl. It must be unequivocally stated once and for all, that the technique of the wide-nutted bow still in use in Germany, Central Europe and America, is not and could never have been in any way connected with the bowed technique of the viols.

In this bow, the hand holds the wide nut endways in a cross-grip, the two middle fingers going round the inner curve of the nut, the little finger below the slide, the thumb and forefinger respectively above and below the stick, while the outer end of the nut is bedded in the palm of the hand, just under the ball of the thumb. Such a grip resembles no other bowed technique whatsoever, and is redolent, not of the gentle viols, but of the bad old days when bassists, as Quantz tells us, were allowed—in fact encouraged—to simplify their parts. Bowed in this way, the bass required thicker, not thinner strings, and a higher fitting of the bridge if the strings are not to rattle on the fingerboard. Much has been written about the sonority of German bass sections, but it has been less often remarked how soon this sonority disappears in all quick passages. The stance required has one irremediable fault; by no distortion of the human frame can the bow be made to cross the strings at right angles, at the proper place. The outward-canting of the instrument, necessary and logical, though not particularly elegant in the playing of the viols, assumes ugly proportions on account of its size.

One is tempted to ask, in conclusion, 'What has become of the violone?' If the facts are as usually stated nowadays, it was the only string contrabass which really mattered, right up to the end of the eighteenth century. This being so, it is curious that so few examples have survived, even as conversions to double basses. Only a very few so-called chamber basses exist, which might at one time have answered the requirements. On the other hand, many true double basses dating from the seventeenth and eighteenth centuries survive and are in use today. If the instrument supplanted the violone during the late eighteenth century, the complete disappearance of the latter, and the survival of so many of the former from a much earlier period, have yet to be explained.

The 'greate dooble base' of Orlando Gibbons[5] is the solitary example of the use of the violone with the consort viols. But this is not a true contrabass. Its lowest note is A on the third ledger line below the bass clef, and a fourth lower, therefore, than the bottom string of the gamba.[6] To gain a true picture of the use of contrabass string tone in late-Baroque and Classical times one would need to study the parts in detail, and to know something of the circumstances under which the music was performed. Only a few suggestions can be offered here. One is that the contrabass of Handel was a violin. The tradition that it was a monster probably only dates from the time when Dr Boyce 'outroar'd the rest', but Handel bass parts fit the normal instrument like a glove, and have the forthright 'punch' of violin music. There is no reason at all to suppose that these would at any time have sounded better on the violone.

Another matter is that the thin homophonic textures of the early symphonic school required a harmonic-rhythmic foundation tone, which at its simplest is the 'one-in-a-bar' bass which is always with us. This lightening and accentuation of a 'single-soul'd air' belongs to the rationalized 'functional' use of instruments, which was the main contribution of that school to the change in style of orchestral writing. It is hard to believe that these composers really had in mind the six-stringed violone, or that they would be likely to get it when a more economically constructed instrument would fill the bill with greater aptitude.

Altogether, generalizations based on the survival of one or two examples of the instrument together with one set of fantasies are pointless when they are applied *ad hoc* to music of different periods and nations. One swallow does not make a summer, and if the word 'hybrid' must be applied, equity suggests that it should be to the exception rather than the rule. The double bass of today is a violin and not a viol. In an instrument so large, those features which it shares with the viols are dictated by utility, and not by the need to conform with *a priori* classification.

NOTES

[1] *Ancient European Musical Instruments* (1941), p. 311.

[2] *ibid*, p. 431, note 722.

[3] See the writer's 'Foundations of Finger Technique on the Double Bass', *Strad*, Nov. 1945, Jan. 1946.

[4] The mixed-interval tuning of such instruments is part of the same function.

[5] See E. H. Meyer, *English Chamber Music* (1946), pp. 3, 153, 163–4.

[6] The note is actually the lowest string of the 7-stringed gamba—an instrument however which is neither 'greate' nor 'dooble'. The free use of the lowest register by Gibbons suggests an instrument of larger body resonance.

THURSTON DART

The Cittern and its English Music*

NEARLY all musical historians know two things about the lute: it cost as much to keep a lute in strings as to keep a horse in fodder, and about half of a lutenist's life was spent in tuning his instrument. Nearly all musical historians know two things about the cittern, too: it was often found hanging in barbers' shops for the amusement of a waiting customer, and its neck usually ended in a grotesque head. A strong conviction that cittern, and citole, and gittern, and quinterna, and cithren are all more or less eccentrically spelt names for a single instrument, a lurking suspicion that the cittern was much played by courtesans, a certain knowledge that the lute was the only worthwhile obsolete instrument[1]—these complete the picture, and the cittern is assigned its place in the history of music below stairs with the bumbulum, the hurdy-gurdy and the humstrum.

But the popularity of the cittern family—its distinguishing features are, essentially, flat back, wire strings, chromatic frets—in England during at least the late sixteenth and seventeenth centuries was very considerable. The cittern was the treble member of a group which included the bandora, orpharion,[2] penorcon, poliphant,[3] and stump,[4] and though the fashion for the more fantastic members, for example, the poliphant and the stump, was short-lived, the others held their position for a long while. Against the ten books of instructions and music for solo lute published between 1540 and 1680 must be set no less than seven books containing instructions and music for solo cittern, demanding in many cases a technique quite as advanced as the lute's. The three printed collections of music for broken consort include parts for two cittern-type instruments and only one lute-type. Newton[5] has pointed out that ten of the lutenist books of ayres specify the orpharion as an alternative to

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the lute. And the earliest printed ayres[6] for voice and accompanying instrument are set to the bandora, even though the book includes music for lute and orpharion.

Why was the cittern so popular? I would suggest these reasons. It was small, robustly made and cheap, and its wire strings rarely broke. The lute was large, delicately and expensively constructed: its gut strings, especially the very thin minikins used for the melody string, broke tiresomely often and good ones were not easy to find. Moreover, regular overhauls of the belly and crossbars were necessary to keep it in good order.[7] The lute needed constant tuning, too, though by no means to the extent that some pessimistic historians would like to believe, and its temperamental reactions to changes in the weather were notorious. Mace recommended that it should be kept between blankets in a well-aired bed, adding however that it was a good idea not to tumble back on top of it. The cittern kept excellently in tune for weeks on end and when not in use could be hung on the wall. Sometimes it was given room in a bandora case.[8] The lute's intimate, dull, nutty tone blended incomparably well with voice and viol, but was easily lost in a purely instrumental consort; the cittern's sprightly open tone was more suited to the voice of an inexpert singer and sounded excellently in consort, though it must be admitted that its brass and steel springs need careful handling if they are not to jangle. There were two ways of striking the strings, either with a plectron or quill, or with the fingers. A quill was never used by the more serious citternists; even when fingering for the right hand is not given (and in most of the repertory it is), the layout of the music demands that the strings be plucked individually, not collectively. I have found only two contemporary English references to the use of a quill, one in the last of the cittern books published when the instrument was almost obsolete:

> With your Thumb and first finger and sometimes the second strike your strings, as is used up on the *Gittar*; that old Fashion of playing with a quil is not good, and therefore my advice is to lay it aside; and be sure you keep your Nails short on the right hand[9]

and the other in Herrick's lines, *His Desire*:

> Give me a man that is not dull,
> When all the world with rifts is full:
> But unamaz'd dares clearely sing,
> Whenas the roof's a-tottering:
> And, though it falls, continues still
> Tickling the Citterne with his quill.[10]

Praetorius,[11] Mersenne[12] and Kircher[13] all state that the cittern is played with a quill, though Mersenne's example of a *tablature du cistre* contains

fingerings for the right hand. But in any case, the history of the cittern between about 1615 and 1650 is very obscure and there is no reason to suppose that fashions in cittern playing were less changeable than those of, for instance, lute playing. In England, too, this would seem to have been a period characterized by a great deal of experiment in instrument-making and instrumentation, though the details have rarely survived. Compare Praetorius' tantalising references to a *klein Englisch zitterlein*,[14] tuned very much higher than the standard cittern, or the casual information given both by Bacon and by Playford concerning the *viola bastarda*.

Only two tunings were in common use on the cittern, which in its standard form had four courses of strings, and these I shall call (following Praetorius) the Italian tuning (*b g d' e'*) and the French tuning (*a g d' e'*), though the tunings are not confined to these countries.[15] The frequency ratios of the French tuning in both the Pythagorean and Aristoxenan scales are 9/8 1 3/2 27/16 and the placing of the first three frets (cittern frets are made of brass strips set into the fingerboard) presents no difficulty. But the fourth fret cannot be placed so as to give usable notes on all four courses of the cittern; if *g'*♯ on the top course is true, then *c'*♯, *b* and *f'*♯ on the lower courses will be far too sharp. Faced with this problem, the instrument-makers neatly sidestepped it by omitting the fret altogether. The problem occurred again among certain of the higher frets—citterns were usually fretted up to *u*—though not in such a severe form, and the instrument-makers were able to solve it by shortening the frets so that they covered the top two, or rarely three, courses only. Clear illustrations of this curious non-chromatic fretting of the cittern are found in sixteenth-century paintings[16] as well as in the careful engravings of Mersenne and Kircher, and imply that the instruments depicted used the French tuning. Tablatures for the French tuning are musically intelligible only if the distance from fret *d* to fret *e* is a tone; Mersenne's example is probably the most easily accessible. Tablatures for the Italian tuning, however, are for a chromatic fretting like the lute's where the distance from fret *d* to fret *e* is a semitone; moreover there are no short frets covering only two or three courses. Such a chromatic fretting is possible only if the tuning is *tempered* and the frets form a series of equally-tempered semitones, and under these conditions the cittern's curious re-entrant tuning gives simply-fingered versions of all the chords commonly used in contemporary music. The ukulele provides a striking modern parallel.

The compass of the cittern was about 2 1/3 octaves from the lowest open course to the highest fret of the top course; the compass of the

simple lute without diapasons was only slightly greater, about 2 2/3 octaves, though this was available for much less advanced positions of the left hand. Its music was usually noted in French lute tablature on a 4-line stave, the bottom space corresponding to the lowest course. Naturally this 4-line tablature is rather easier to play from than the lute's 6-line, often further complicated by the use of diapasons. Each course was strung with a pair of unison strings and only in Playford's *Booke of New Lessons for the Cithern and Gittern* (1652) are these strings more exactly described:

> *let your* Bassis *be of yellow twisted Wyer, and also your* Means *and* Tenors *of yellow Wyer, only your* Trebles *of white Wyer, if they be strung, otherwise they will not sound true in the stopping.*

In other words, the *g* strings should be overspun brass, the *b* and *d'* strings plain brass, and the *e'* strings of steel.

The cittern, in short, was ideal for the enthusiastic amateur, for the dilettante courtier:

> Sometimes I foot it with dancing: now with my gittern and else with my cittern, then at the virginals (ye know nothing comes amiss to me).[17]

for the poetaster:

> Songs for secret recreation and pastime in chambers with company or alone, were the ordinary musicke's amourous: such as might be sung to the lute, citheron or harpe.[18]

> On Saterday I will you send
> Some Lessons for your Lute;
> And for your Citterne eke a few
> Take leaves till time of fruite.[19]

for the young gentlewoman who, though she might have no leisure for such things when married, should be able:

> to read and write, to play upon the virginals, lute and cittern: and to read pricksong at first sight.[20]

for incidental music to plays: amongst the instruments owned by the Lord Admiral's company in 1598 were a cittern and a pandora,[21] a company of English comedians visiting Munster in 1599 played on 'luter, zitheren, fiolen, pipen und dergelichen'[22] and the actor Phillipes bequeathed his cittern, bandora and lute to one of his apprentices.[23] The music teacher in the plan for Queen Elizabeth's Academy (about 1572) was to play the lute, bandora and cittern and would have been well paid for doing so.[24] Barbers played it too: Hawkins quotes the following doggerel poem about John Est, some of whose lyra-viol music

appears in Playford's *Musick's Recreation on the Lyra-Viol* (1652):

> In former time 't hath been upbrayded thus,
> That barber's musick was most barbarous,
> For that the cittern was confin'd unto
> The Ladies Fall, or John come kiss me now,
> Green Sleeves, and Pudding Pyes, with Nell's Delight,
> Winning of Bolloigne, Essex' last good night.
> But since reduc'd to this conformity,
> And company became society,
> Each barber writes himself, in strictest rules,
> Master, or bachelor i' th' musick schools,
> How they the mere musitians do out-go,
> These one, but they have two strings to their bow.
> Barber musitians who are excellent,
> As well at chest, as the case instrument,
> Henceforth each steward shall invite his guest
> Unto the barber's and musitian's feast,
> Where sit ye merry, whilst we joy to see
> Art thus embrac'd by ingenuity.[25]

In one form or another, the cittern had long been popular in England, though no music earlier than the middle of the sixteenth century survives. Its mediaeval form, the *citole* (with four single wire strings) appears among the instruments of the Minstrel Gallery in Exeter Cathedral (fourteenth century) and on the pulpit at Beverley Minster, Yorkshire (fifteenth century).[26] In Chaucer's *Knight's Tale,* Venus has a citole in her right hand, and there are further references in Wiclif, Gower and Lydgate.[27] Galilei even suggests that it is English in origin:

> Fu la cetera usata prima tra gli inglezi che da altre nazioni, nella quale isola si lavoravano gia in eccellenza . . .[28]

but then nearly every early writer seems strangely reluctant to claim it for his own country; Tinctoris[29] calls it Italian, the Portuguese ascribe it to Flanders.[30] It would be foolish to try to reconcile these conflicting statements now, more especially since specimens of neither instrument nor music have survived. The first *cittern* tablature is roughly contemporary with the presentation of a 'faire cyterne' to Queen Mary in 1556. It is contained in the Mulliner Virginal Book (BM. Add MS 30513), ff. 118–127.[31] Since the contents of this part of the MS have not been accurately catalogued up to now, here is a list of them:

f.118	A Songue	[4-course cittern]
118′–119	A Pavion	[5-course cittern]
119′–120′	[A galliard]	Gitterne
120′–121′	[A pavane]	[gittern]
	[an unidentified fragment]	[gittern]
122	[galliard to passamezzo antico]	[4-course] Sytherne

122′–123	[A cin]quepasse	[4-course cittern]
123–123′	Was not goode Kinge Solomon	[4-course cittern]
123′–125	Queen of Scotts Gallyard to the Sithorne	[4-course cittern]
125–126	The French Galliarde	[4-course cittern]
126′–127	Venetian Galliarde	[4-course cittern]

The only composers named are on f.125 (finis the queene of scottes galliarde, per T[homas] M[ulliner]) and f.127 (finis galliarde Churcheyarde). This is no doubt Thomas Churchyard (1520?–1604), author of the *Mirrour for Magistrates*. The MS is rather untidily written on hand-ruled 6-line staves in French tablature; a + which occurs immediately to the left of certain letters indicates an ornament, probably a mordent. In Pierre Phalese's *Hortus Musarum* (1552–3)[32] a similar cross is used to indicate a *tenue*, but it cannot have this meaning in the Mulliner book. The *gittern* was similarly shaped to the cittern, but had four pairs of gut strings tuned *d g b e′*; its sudden popularity around 1550 seems to have been much deplored by more serious musicians; in 1557, Bonaventure Desperriers wrote:

> The *vielle* is for the blind, the rebeck and viol for the minstrels, and the lute and gittern for musicians, especially the lute by reason of its greater perfection: in my earliest years we used it more than the gittern but for twelve or fifteen years now, all the world's a-gitterning; the lute is almost forgotten, for I know of no music which cannot be played on the gittern, and it is much easier than the lute.[33]

He, too, is the authority for the fretting of the gittern which was chromatic to *n*, 'though commonly we do not go beyond *i*'. Although the cittern music in the Mulliner book uses the French tuning, like nearly all the Continental cittern books from Viaera's *Nova et elegantissima . . . carmina* (Louvain, 1564) to Valerius' *Nederlandtsche Gedenck-Clanck* (Harlem, 1626), the fretting is chromatic up to *m*. I can offer no explanation for this anomaly. The pavane on ff.118′–119 is apparently the only surviving music for 5-course cittern, tuned *d a g d′ e′*; Praetorius gives tunings for it, but Wolf states in his encyclopaedic *Handbuch der Notationskunde*, vol. II, p. 131, that he has been unable to discover any music for it. The musical value of the Mulliner pieces is slight, though some difficult positions of the left hand are used; the Queen of Scots' galliard is the most developed in its form (A A′ B B′ C C′) and the most pleasant to play and hear.

The breffe and playne instruction to learne to play the gyttron and also the cetterne of 1568[34]—probably a translation of le Roy and Ballard's *Breve et facile instruction pour . . . le Cistre* (Paris, 1565)—is unfortunately lost; so is Barley's *New Booke of Citterne Lessons* of 1593.[35] The *most perfect and true Instruction whereby a man maye learne by his own industrie to*

playe on the Cytterne without the helpe of any teacher entered in 1593 is, I suspect, only a doublet of Barley's book. Four years later, Peter Short published Antony Holborne's *Cittharn Schoole*, undoubtedly the most interesting and the most technically difficult of all the cittern books. It contains 33 pieces for cittern solo, 23 pieces for cittern and bass (viol?), and two Fantasias à 3 which are printed both in tablature for the cittern and in three separate staff notation parts.[36] The compasses of these separate parts suit recorders better than viols, though no instruments are specified. There are a few very minor differences between tablature and parts, mostly of an accidental or ornamental nature, but I think it unlikely that cittern and other instruments were to play these Fantasias in consort as some commentators have suggested.[37] They are more probably intended as a demonstration of how to transcribe polyphonic music into tablature; such demonstration pieces are common in most contemporary tutors. The book is finely printed in French tablature on a 4-line stave. The frets run chromatically up to *q* and the Italian tuning is used throughout, with one exception (*Maister Birds Galliard* for cittern and bass, where the pitch of the bass part demands a cittern tuned to *e c g a*; it is an arrangement of the fifth galliard of *My Lady Nevels Booke*). *Maister Earles Pavane* (Holborne, ff. H′ and H2) appears, set by Giles Farnaby, as no. 235 of the *Fitzwilliam Virginal Book*: some of the other pieces in the *Cittharn Schoole* were reprinted, set for five instruments, in Holborne's *Pavans, Galliards . . . for Viols, Violins or other Musicall Winde Instruments* (1599). Its contents are carefully graded, though rather surprisingly there are no instructions on fingering, tuning or playing the cittern. In his preface 'to the proficient Scholler or lover of the Cittharn' Holborne rather conventionally protests that pirate editions (perhaps in Barley's book of 1593? Barley was never much troubled by considerations of copyright), not a desire for fame, have made him publish his pieces; he adds that he has taken this opportunity of revising and correcting them.

> I have . . . marshalled them in such method and forme, as to my judgment may best beseeme thee in degrees of thine habilitie to entertaine them. For in the front of the booke (as the first step or key to open a way to thy beginnings) I have prefixed some few tastes, which by another name I call *Praeludia*: things short and not hard: delivered unto thee of purpose to guide thy hand to some proper use of plaie. . . . Next unto them as in an orderly consequence I have conjoyned the most usuall and familiar grounds of these our times, for consort or thine own private selfe: together with some such other light fansies of vulgar tunes for variety as I could best call to memory: . . . To these as thy increase of performance riseth, have I annexed some of the same grounds in variable division: done after a more quick and hard maner of plaie: . . . Lastly,

> (as a complet summary of this little worke) I conclude with thinges grave and more judicious then the rest with their Bases in prickesong notes. . . .

The *familiar grounds* include the *passamezzi antico* and *moderno* with their galliards, 'Go from my window', 'Walsingham', and 'Bonny Sweet Robin.' Most of the remaining pieces are pavanes, galliards and almaines, all excellent music: Holborne's music is as well made as his prose. His use of the italianate term *tastes* for preludes is interesting; compare Joanambrosio Dalza's *Tastar de corde* in his *Intabulatura de Lauto* printed by Petrucci in 1508.

The only music of comparable difficulty is in Thomas Robinson's *New Citharen Lessons* (1609). Robinson, like Holborne, was a lutenist of distinction (cf. his *Schoole of Musicke* and *Medulla Musicke . . . transposed to the lute*,[38] both of 1603; the latter work is lost); he would seem, moreover, to have been a rather more practically-minded man than Holborne. He explains the essential points of cittern playing in the customary dialogue between *Master* and *Scoller*, and his instructions are mostly clear and to the point, though as usual he gives the relative pitch of the strings, not their actual pitch:

> you shall then learne to tune your *Citharen* as followeth. First, set up your Trebles so hie as you dare venter for breaking, and let them be both of one tune or sound.

When the *Scoller* grows impatient to be playing, the *Master* rebukes him with:

> to learne before you know what, why, and how: were like a Bee moyld in a barrell of honny, for how were it possible for you to play well? with a good grace? comely without making of anticke faces: except you first know a rule, or reason to guide your hand and body . . . for if you should get false fingring at the first, you should be constrained, first to learn to forget, before it were fit for you to remember, which were both a griefe, trouble, and loss of time and charges.

The seventh of his rules, which concerns ornamental cadences, could be clearer, though:

> Note that, that is said to be a point, when two of one time, foure or twice foure, all which goe by two and two, and the second is single, or all be single stoppes, as is above mentioned.

The contents of the book are slightly simpler and much more varied than Holborne's; duets for two citterns in the unison (a Jig and an unnamed set of variations on a theme used by Giles Farnaby in *Rosasolis*—no. 143 of the *Fitzwilliam Virginal Book*—and by Samuel Scheidt in his *Canzon ad imitationem Bergamascae Anglicae*—no. 26 of *Paduana, Galliarda, Couranta . . . quaternis et quinis vocibus* published in 1621), songs

accompanied by cittern and bass-viol, 'strange lessons with strange tunings for the foure stringed Citharen, the like never found out before for sweetnes and goodnes to play (even an organe kind of play) alone' (Robinson omits to mention what the tuning is—*f g d' e'*—used for My Lord Treasurer's pavane and galliard, and for the first of the songs), a teaching piece with copious fingerings both for right and left hands (ff. D3′ and D4) on the *Hornpipe* theme,[39] and finally six pieces for 14-course archcittern, tuned G_1 A_1 $B\flat_1$ *C D E F* (diapasons) *G d f b♭ g d' e'* (over the fingerboard) and noted on a 6-line stave. The title page and several others are embellished with a rather crude wood-block of this instrument, which, says Robinson proudly, 'was first begun by an Italian in Italy, but altered, and strings augmented, by me'. It is possible that the *citaroni* which the Marchese Federico II Gonzaga of Mantua commanded to be made in 1523[40] were archcitterns; other records of them appear in Praetorius who describes[41] a 12-course archcittern 'as big as a bass-viol and as resonant as a harpsichord' which a certain Dominicus of Prague used to play, tuned *e♭ B♭ f c g d a e b g d' e'*, and in the *Intavolatura di liuto attiorbato, Libro Quarto* (Venice, 1616) of Pietro Paolo Melii, which contains a *Balletto detto l'ardito gracioso* danced in Vienna in 1615, for a broken consort of *violino, flauto, viola bassa, alpa*(!) *doppia, chlavacimbalo* (!), *lauto corista, lauto piu grando un tasto, lauto alla quarta bassa,* and *citara tiorbata.* The music of this *balletto* is unfortunately most poorly contrived, and the parts for the lutes and archcittern (tuned *G d g b f d' e'*, apparently without diapasons) are almost identical. Galpin,[42] by the way, calls such archcitterns *Syrons*; so does Ruth-Sommer[43] who adds, mistakenly, that no music survives. I have been unable to find any contemporary use of this name.

With the exceptions I have mentioned, Robinson's book is for the Italian tuning. It is perhaps not quite up to Holborne's very high standard, but Robinson knew his public better. His solo music includes pavanes, galliards, fantasies, corantos, psalms, almaines, arrangements of popular lutesongs ('Farewell dear love', 'Now O now we needs must part', 'What if a day', 'Can she excuse'), conceits ('Robinsons Modicum, his Riddle, his Idelsbie' (= idles by ?), 'Robarts Request'), as well as the usual 'familiar grounds'. His setting for archcittern of the *passamezzo antico* is curious; in ₵, it contains sections in sesquialtra (roughly, three against two), octupla (roughly, tempo doppio) and dupla sesquialtra (roughly, quintuplets). Compare Morley's remarks about the *passamezzo moderno* or quadrant pavane:

> It should seem you came latelie from a barbars shop where you had **Gregory Walker*, or a Curranta plaide in the newe proportions by them latelie found out, called *Sesquiblinda*, and *Sesqui harken after.*

[*marginal note*] *That name in derision they have given this quadrant pavan, because it walketh amongst the barbars and fidlers more common then any other.[44]

The woodblock of a 4-course cittern which appears on f. A3′ and elsewhere shows chromatic frets running the whole width of the neck up to *q*, 3-course fret *r*, 2-course frets *s* and *t*, and a single-course melody string fret *u*. Robinson does not use the very high frets, however.

But the amateur citternist was not really at his ease in these difficult solo pieces. If his technique was sufficiently mature for him to attempt Holborne's virtuoso pieces, then he could easily have made a name and even a living for himself as a lutenist, like Holborne and Robinson. Moreover there are no large collections of MS solo cittern music; the only one known to me is in the University Library, Cambridge (pressmark; Dd.4.23) and it has no more than 34 leaves. The Panmure House manuscript in the possession of the Earl of Dalhousie is apparently incomplete,[45] though I have not yet examined it myself. In fact, the cittern's position in sixteenth- and seventeenth-century music rests on its harmonic possibilities in ensemble playing rather than on its use as a solo instrument; it is an instrument of foundation, not ornamentation. The first example of this is in Richard Alison's *Psalmes of David in Meter* (1599), which contains metrical versions of the psalms set for four voices in a very pure and elegant homophonic style,

> the plaine song being the common tunne to be sung and plaide upon the Lute, Orpharyon, Citterne, or Base Violl, severally or all together, the singing part to be either Tenor or Treble to the Instrument, according to the nature of the voyce, or for four voyces: With tenne short Tunnes in the end, to which for the most part all the Psalmes may be usually sung, for the use of such as are of mean skill, and whose leysure least serveth to practize.

The four vocal and two tablature parts (the orpharion was tuned exactly like the lute so that one tablature serves for both; the bass viol would play the bassus voice part) are set out on the open page *en regard* so that all the performers could, if necessary, read from the one copy. The cittern part (4-course, Italian tuning) is very easy: no note shorter than , no fret higher than *g*, no full stop higher than $\begin{matrix} g \\ d \\ d \\ d \end{matrix}$, and no attempts at ornamentation or passage work except for an occasional passing-note. It is a reduction of the essential harmonic framework of each psalm-setting into terms suitable for the cittern; chords may be inverted, or expanded, or brought into close position in order to bring them under the fingers of the left hand in the most convenient form.

The lute part is very different; it is a careful and grammatical transcription of the vocal parts, altered as little as possible. In general, lute transcriptions are accurate replicas of the originals; the lute part of Dowland's *Lachrimae, or seaven teares* (1604) is a good example of how a far more complicated contrapuntal tissue than Alison's can be expressed in lute terms.

The same kind of cittern writing, to the same tuning, appears in the ensemble music of Thomas Morley's *First Booke of Consort Lessons* (1599, second edition 1611) and Philip Rosseter's *Lessons for Consort* (1609). Both collections are for a broken consort of three melody instruments (treble viol, flute[=recorder], bass viol), two harmony instruments (cittern, pandora), and lute which may act either as a melody or as a harmony instrument, or both. The cittern parts are very simple; no passage work, no short notes, no advanced left-hand positions. Rosseter uses no fret higher than *g* and no full stop higher than $\begin{matrix} g \\ d \\ d' \\ d \end{matrix}$; Morley once uses $\begin{matrix} l \\ h \\ h \\ h \end{matrix}$. Semiquavers occur in neither. And perhaps the most interesting feature of these consort pieces is the continuity of the cittern parts. Even in the most complicated of the Morley *Lessons*, the series of six variations on 'Go from my window', the cittern part is uninterrupted while the other instruments echo and reply to one another. The role of the guitar in the modern dance orchestra is strikingly similar, providing a rhythmic harmonic background to the solo instruments. Sir William Leighton's *Teares or Lamentacions of a Sorrowfull Soule* (1614) contains eighteen 'consort songs' for four voices which can be sung and played with the same group of instruments, lute, cittern and bandora parts being printed in tablature and the treble viol, recorder and bass viol playing from the cantus, altus and bassus voice parts. Although the settings are by such eminent musicians as Dowland, the elder Milton, Coperario and Bull as well as by Leighton himself, the instrumental accompaniments are in a uniform style and the cittern parts as simple as those of Rosseter's *Lessons*.

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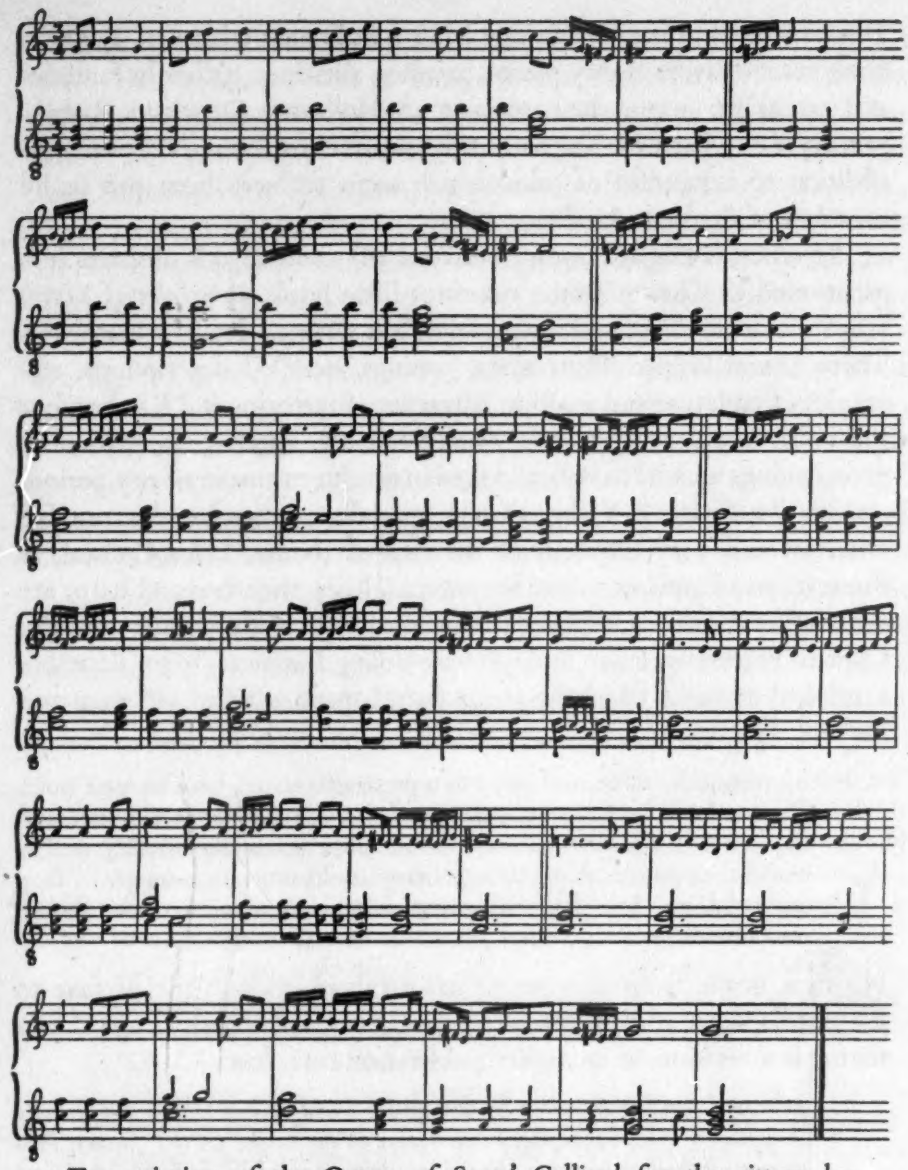
Transcription of the Queen of Scots' Galliard for the cittern by Thomas Mulliner

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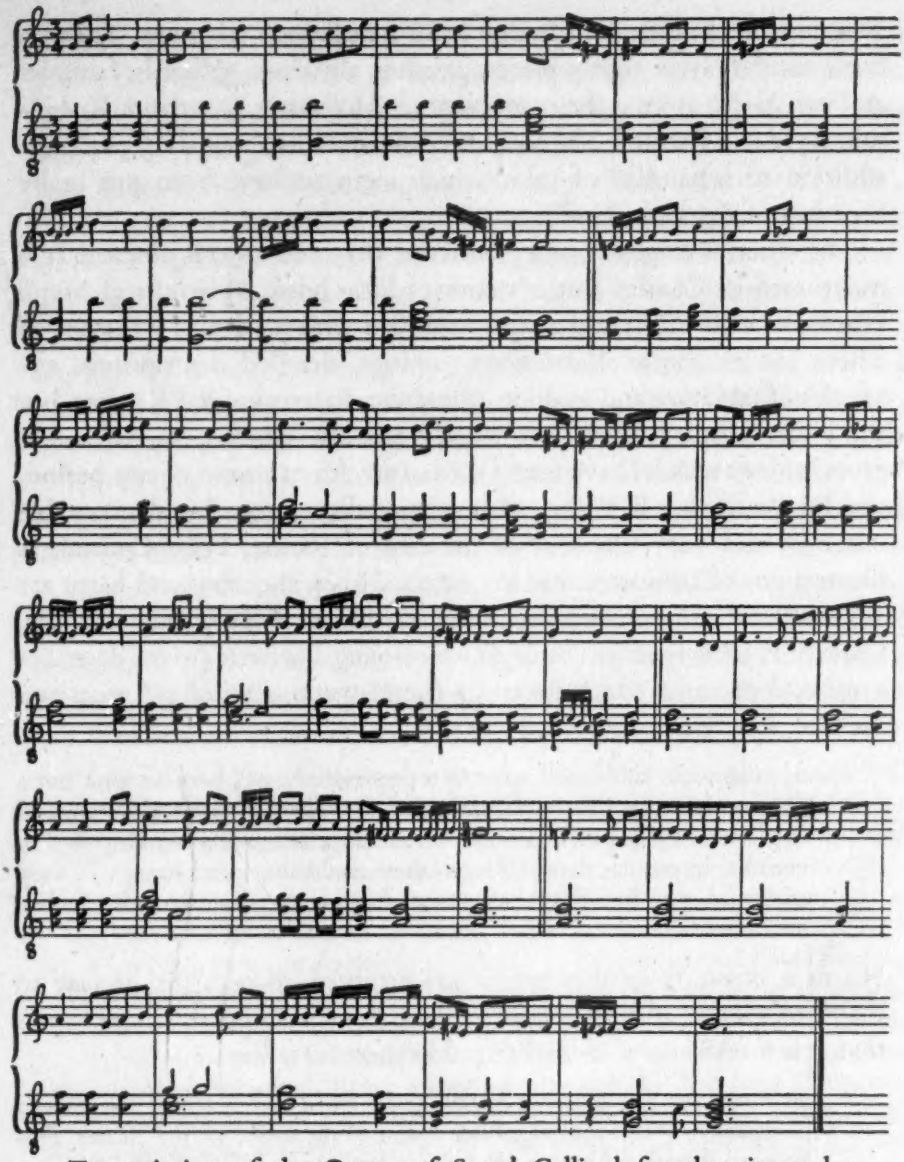
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The cittern's English history between 1615 and 1650 is obscure. It is mentioned in Charles Butler's curious little book, *Principles of Musik* (1636), in a list of musical instruments, but with no details whatsoever. There are of course illustrations, tunings, detailed descriptions, examples of tablature and so on in Mersenne, Praetorius and Kircher, but the information given is not wholly reliable. Kircher, in particular, gives tunings which I have found used in no cittern music of any period, and his *Paradigmae* II-V (pp. 484–5), specially written by 'that notable citternist and very Orpheus of the city of Rome, Lelio Colista', as illustrations of consort music for citterns, lutes, theorbos and harp, are sad stuff and most misleading, since all the parts are purely melodic. Captain Francis Freeman in *Light vanquishing Darkness* (1650) describes a musical evening which he and a friend spent with an old man and his son. The friend

> rose from the table, and went to a presse-cupboard, here he took out a *fife-recorder* and a *Citern*, and delivered the recorder to the old man, and the Citern to his son, and they played half a dozen lessons, very well in consort, insomuch that I thought they could sing prick-song . . . they answered no, but they had some delight to play on these foolish instruments.[47]

No new music from this period has survived, though the preface to Playford's *Booke of New Lessons for the Cithern and Gittern* (1652) shows that it is a revision of an earlier publication now lost:

> *In regard my former paines in this kinde, found such a loving and friendly Acceptance, it hath incouraged mee againe to the worke for thy further Proficiency: Therefore I have to this Edition, first amended all the Faults, that were in the former: and likewise added many Excellent Choyce Tunes for the* Cithern, *not before Printed.*

Perhaps this is the *New Book for the Cithren* of 1650 mentioned by Pulver;[48] it must in this case have been among Playford's earliest publications. Certainly the *Booke of New Lessons* must have been one of Playford's first publishing ventures, if its many misprints are a guide. Its 38 pages of cittern music—24 pages of gittern music follow a separate title-page, preface and table—include something for every taste: Playford's business instinct was sound enough, even though his printing is shoddy and inelegant. There are settings of the inevitable

'familiar grounds' (such as the 'Spanish Pavan', and 'John come kiss me now'; the *passamezzi* were no longer fashionable), Civil War tunes for Roundheads and for Royalists ('Lashleyes March', 'When the King enjoys his own again', 'Vive le Roy'), dances by Mr Mulloyne, Captain Winn and Mr Robinson, bawdy songs ('Daylight or a Candle', 'I am a yong and harmless maid'), as well as nine *Psalmes to sing to the Citharen*, reprinted without acknowledgment from Alison's 1599 Psalter. The technique needed is moderate; frets up to *q*, to the Italian tuning.

During the next fourteen years, Playford advertises various books of cittern music, but no copies are known to have survived. Ritson[49] mentions *Cithren and Gittern Lessons, with plain and easie instructions for beginners thereon* (1659), and there is also *Musick's Solace on the Cithren and Gittern* of about the same date. Both may indeed only be doublets of the 1652 book.

The last of the cittern books, *Musick's Delight on the Cithren*, was published by Playford in 1666. It seems to have been an attempt to oust the fashionable guitar, introduced by Matteis and Corbetta a few years earlier. Playford, like Locke[50] and Simpson,[51] disapproved of foreigners and, like Mace,[52] deplored the decline of the old polyphony:

> *It is observed that of late years all* Solemn *and* Grave Musick *is much laid aside, being esteemed too heavy and dull for the light Heels and Brains of this Nimble and wanton Age: Nor is any* Musick *rendred acceptable, or esteemed by many, but what is presented by Forreigners; Not a City Dame though a* Tap-Wife, *but is ambitious to have her Daughters Taught by Mounsieur La* Novo Kickshawibus *on the* Gittar, *which Instrument is but a new (old one) used in* London *in the time of* Q. Mary . . . *being not much different from the* Cithren, *only that was strung with* Gut-strings, *this with* Wyre, *which was accounted the more sprightly and Cheerful* Musick, *and was in more esteem (till of late years) then the* Gittar: *Therefore to revive and restore this Harmonious Instrument, I have adventured to publish this little Book of* Instructions *and* Lessons. . . . *Omitting all those difficult full Stops which former Lessons were stuft with, whereby the* Tune *intended was quite lost, the* Ear *and* Patience *of the* Practitioner *confounded; (yet to its old* Tuning:). . . . *All which if it prove useful to any, I have the end of my Expectation, and remain a Well-wisher to all Lovers and Practitioners of* Musick.

But the cittern was probably past restoring and reviving by this time; on June 5, 1660, Pepys writes:

> My Lord called for the lieutenant's cittern, and with two candlesticks, with money in them, for symbols [=cymbals], we made barber's music, with which my Lord was well pleased.

Certainly cittern music is reduced to its lowest terms in *Musick's Delight*; the ninety odd pieces that it contains, including dances by Locke, William Lawes, Ives, Colman and Chambonnières, and its seventeen

The remainder of the Cambridge MSS is in French tablature. The solo book contains over eighty pieces, pavanes, almaines, galliards, fantasies and variations; among the composers are Holborne, Dowland, Robinson, Byrd and Parsons. The consort book contains about sixty pieces (in addition to a handful of solos which seem to have been put in by mistake) of the same kind.

The cittern's English history between 1615 and 1650 is obscure. It is mentioned in Charles Butler's curious little book, *Principles of Musik* (1636), in a list of musical instruments, but with no details whatsoever. There are of course illustrations, tunings, detailed descriptions, examples of tablature and so on in Mersenne, Praetorius and Kircher, but the information given is not wholly reliable. Kircher, in particular, gives tunings which I have found used in no cittern music of any period, and his *Paradigmae* II-V (pp. 484–5), specially written by 'that notable citternist and very Orpheus of the city of Rome, Lelio Colista', as illustrations of consort music for citterns, lutes, theorbos and harp, are sad stuff and most misleading, since all the parts are purely melodic. Captain Francis Freeman in *Light vanquishing Darkness* (1650) describes a musical evening which he and a friend spent with an old man and his son. The friend

> rose from the table, and went to a presse-cupboard, here he took out a *fife-recorder* and a *Citern*, and delivered the recorder to the old man, and the Citern to his son, and they played half a dozen lessons, very well in consort, insomuch that I thought they could sing prick-song . . . they answered no, but they had some delight to play on these foolish instruments.[47]

No new music from this period has survived, though the preface to Playford's *Booke of New Lessons for the Cithern and Gittern* (1652) shows that it is a revision of an earlier publication now lost:

> *In regard my former paines in this kinde, found such a loving and friendly Acceptance, it hath incouraged mee againe to the worke for thy further Proficiency: Therefore I have to this Edition, first amended all the Faults, that were in the former: and likewise added many Excellent Choyce Tunes for the* Cithern, *not before Printed.*

Perhaps this is the *New Book for the Cithren* of 1650 mentioned by Pulver;[48] it must in this case have been among Playford's earliest publications. Certainly the *Booke of New Lessons* must have been one of Playford's first publishing ventures, if its many misprints are a guide. Its 38 pages of cittern music—24 pages of gittern music follow a separate title-page, preface and table—include something for every taste: Playford's business instinct was sound enough, even though his printing is shoddy and inelegant. There are settings of the inevitable

'familiar grounds' (such as the 'Spanish Pavan', and 'John come kiss me now'; the *passamezzi* were no longer fashionable), Civil War tunes for Roundheads and for Royalists ('Lashleyes March', 'When the King enjoys his own again', 'Vive le Roy'), dances by Mr Mulloyne, Captain Winn and Mr Robinson, bawdy songs ('Daylight or a Candle', 'I am a yong and harmless maid'), as well as nine *Psalmes to sing to the Citharen*, reprinted without acknowledgment from Alison's 1599 Psalter. The technique needed is moderate; frets up to *q*, to the Italian tuning.

During the next fourteen years, Playford advertises various books of cittern music, but no copies are known to have survived. Ritson[49] mentions *Cithren and Gittern Lessons, with plain and easie instructions for beginners thereon* (1659), and there is also *Musick's Solace on the Cithren and Gittern* of about the same date. Both may indeed only be doublets of the 1652 book.

The last of the cittern books, *Musick's Delight on the Cithren*, was published by Playford in 1666. It seems to have been an attempt to oust the fashionable guitar, introduced by Matteis and Corbetta a few years earlier. Playford, like Locke[50] and Simpson,[51] disapproved of foreigners and, like Mace,[52] deplored the decline of the old polyphony:

> *It is observed that of late years all* Solemn *and* Grave Musick *is much laid aside, being esteemed too heavy and dull for the light Heels and Brains of this Nimble and wanton Age: Nor is any* Musick *rendred acceptable, or esteemed by many, but what is presented by Forreigners; Not a City Dame though a* Tap-Wife, *but is ambitious to have her Daughters Taught by Mounsieur La* Novo Kickshawibus *on the* Gittar, *which Instrument is but a new (old one) used in* London *in the time of* Q. Mary . . . *being not much different from the* Cithren, *only that was strung with* Gut-strings, *this with* Wyre, *which was accounted the more sprightly and Cheerful* Musick, *and was in more esteem (till of late years) then the* Gittar: *Therefore to revive and restore this Harmonious Instrument, I have adventured to publish this little Book of* Instructions *and* Lessons. . . . *Omitting all those difficult full Stops which former Lessons were stuft with, whereby the* Tune *intended was quite lost, the* Ear *and* Patience *of the* Practitioner *confounded; (yet to its old* Tuning:). . . . *All which if it prove useful to any, I have the end of my Expectation, and remain a Well-wisher to all Lovers and Practitioners of* Musick.

But the cittern was probably past restoring and reviving by this time; on June 5, 1660, Pepys writes:

> My Lord called for the lieutenant's cittern, and with two candlesticks, with money in them, for symbols [=cymbals], we made barber's music, with which my Lord was well pleased.

Certainly cittern music is reduced to its lowest terms in *Musick's Delight*; the ninety odd pieces that it contains, including dances by Locke, William Lawes, Ives, Colman and Chambonnières, and its seventeen

Ayres . . . to sing with the Cithren are all almost entirely melodic with only an occasional and often quite inappropriate chord at cadences and accents. [*My lodging is*] *On the cold ground*, for instance, is in D minor; one chord of G major in the 3rd bar, and chords of A major in the 5th and 13th bars form the entire accompaniment to a melody mainly confined to the top string. Even the final note is unaccompanied. And though the words and music of the *Ayres* are excellent—they include 'Gather your rosebuds', 'I prythee send me back my heart' and the 'Angler's Song', as well as two catches, 'The wisemen were but seven' and 'A boate, a boate have to the Ferry'—the settings are most meagre, consisting of the melody, which the singer was expected to disentangle from the tablature, and a few random chords. The Italian tuning is used throughout, and as in the 1652 volume, the rhythm signs peculiar to tablatures for plucked instruments have been replaced by ordinary staveless notes. Playford says:

> I have here set [the tunes] down in that character, which is most used in *Musick*; being loath to burthen your Memory with two sorts of Notes, where one is sufficient.

But this was no innovation; lyra viol music had used staff notation to indicate its rhythm for over fifty years—compare Ferrabosco's *Lessons for* 1. 2. *and* 3. *Viols* (1609) or Hume's books. A slanting dash / occurs from time to time; in the solo music of the book it has the meaning of an appoggiatura though Playford forgets to say so, and in the songs, 'where this dash / is under two letters, those two are to be sung to one Syllable.'

Advertisements of citterns and cittern music are still occurring as late as 1675 though by that time the cittern was more or less out of fashion. In the eighteenth century, the *English guitar* retained something of the cittern's form though not its tuning, and its huge popularity in the last decades of the century accounts for the specimens often seen in antique shops at the present day. But its music has nothing in common with the cittern's though it is characteristic enough to deserve a separate study.

To sum up, the cittern and its family enjoyed a considerable and lasting popularity in England from the fourteenth to the end of the seventeenth centuries. It was by no means merely a barber's shop instrument, and a quantity of fine solo music has survived. But its real importance is as a thoroughbass instrument, the backbone of the broken consort used by Morley and Rosseter in their *Lessons*, and its simplicity, small size and cheapness ensured its place in Elizabethan and Jacobean music.

[1] cf. F. Kidson, in Grove's *Dictionary* (4th edn., 1940), II, p. 483, article *Guitar*.

[2] T. Mace, *Musick's Monument* (1676), p. 70: '*Bandoras*, *Auferions*, *Citterns*, and *Instruments* strung with *Wyar Strings* . . .' M. Drayton, *Polyolbion* (1613), song IV:

> 'Sone that delight to touch the sterner wiry chord,
> The Cithren, the Pandore and the Theorbo strike.'

In quoting from these and other early sources, I have used the modern equivalents of *u*, *v*, *j* and *y*.

[3] J. Playford, *Introduction to the Skill of Music* (10th edn., 1683), f.A7′:

> '*I have been informed by an ancient Musician and her Servant, that* Queen Elizabeth *did often recreate her self on an Excellent Instrument called the* Poliphant, *not much unlike a* Lute, *but strung with Wire* . . .'

[4] J. Playford, *Musick's Recreation on the Viol, Lyra Way* (1661).

[5] *Proceedings of the Royal Musical Association*, LXV (1939), p. 67. The tuning he gives for the bandora is an octave too high.

[6] W. Barley, *New Booke of Tabliture* (1596), third part.

[7] T. Mace, *op. cit.*, pp. 54–61.

[8] F. W. Galpin, *Old English Instruments of Music* (1910), p. 34, quotes from the inventory of the possessions of Sir Thomas Kytson († 1603): 'one Bandore and a Sitherne with a dooble case.'

[9] J. Playford, *Musick's Delight on the Cithren* (1666), f.A7.

[10] R. Herrick. *Hesperides* (1648).

[11] M. Praetorius, *Syntagma Musicum* (1618), vol. II, p. 5.

[12] M. Mersenne, *Harmonie Universelle* (1636), 'Traité des Instrumens á chordes', f. 97′.

[13] A. Kircher, *Musurgia* (1650), p. 453.

[14] M. Praetorius, *op. cit.*, p. 55: 'Noch ist vor drey Jahren ohn gefehr ein Engelländer mit einem gar kleinen Citterlein . . . in Deutschland kommen . . . Darauff er eine frembde / doch gar sehr liebliche und schöne *Harmony* mit feinen reinen *diminutionibus* und zitternder Hand zuwegen bringen können . . .'

An illustration of the instrument will be found on Plate XVI of the *Theatrum Instrumentorum*. Some details of one of its virtuosi are given by A. Pirro in *Schütz* (1924), pp. 66 and 68.

[15] C. Sachs, *op. cit.*, p. 346, should be corrected,

[16] e.g. G. Kinsky, *History of Music in Pictures* (1930).

[17] R. Laneham, quoted by W. Chappell, *Popular Music of the Olden Times* (1855–9), p. 100.

[18] R. Puttenham, *Art of Poesie* (1589).

[19] T. Kendall, *Flowers of Epigrammes* (1577), quoted by Davey, *History of English Music* (2nd edn., 1921), p. 151.

[20] T. Dekker, *Guls Hornebooke* (1609), quoted by Chappell, *loc. cit.*

[21] M. C. Boyd, *Elizabethan Music and Musical Criticism* (1940), p. 190.

[22] A. Cohn, *Shakespeare in Germany* (1865), pp. CXXXIV-V.

[23] V. C. Ravn, in *SIMG*, VII (1907), pp. 561–2.

[24] M. C. Boyd, *op. cit.*, p. 15.

[25] Sir J. Hawkins, *General History of . . . Music* (edn. of 1875), I, p. 768.

[26] F. W. Galpin, *op. cit.*, pp. 27–8, figs. 3 and 4.

[27] H. Panum, *Stringed Instruments of the Middle Ages* (English edn., 1941), p. 467.

[28] V. Galilei, *Dialogo* . . (1581), p. 147.

[29] J. Tinctoris, *De inventione et usu musicae* (1484?), quoted by K. Weinmann, *Riemann Festschrift* (1909), p. 271, and by J. Wolf, *Handbuch der Notationskunde* (1919), II, p. 130.

[30] H. Panum, *op. cit.*, p. 464.

[31] cf. H. F. Redlich in Grove's *Dictionary* (4th edn., 1940), supplementary vol., p. 651, article *Virginal Music.*

[32] cf. H. Quittard, in *SIMG*, VIII (1908), pp. 260–1.

[33] *Discours non plus melancoliques que divers* (1557), p. 95. The authorship of this work is uncertain: E. van der Straeten, *La Musique aux Pays-Bas* (1867–88), II, p. 371, suggests Bonaventure Desperriers; K. Meyer and P. Hirsch, *Katalog der Musikbibliothek Paul Hirsch* (1928), I, p. 216, suggest Elie Vinet; elsewhere Jacques Pelletier has been suggested. The translation of the passage quoted is by T. D.

[34] A. Deakin, *Musical Bibliography* (1892), p. 4.

[35] R. Steele, *Earliest English Music Printing* (1903), p. 101.

[36] The book also contains six canzonets à 3 by William Holborne.

[37] e.g. M. C. Boyd, *op. cit.*, p. 155.

[38] A. Deakin, *op. cit.*, p. 10.

[39] This is a vamping sequence of tonic, subdominant, dominant and tonic major chords.

[40] G. Kinsky, in *Acta Musicologica*, X (1938), p. 104.

[41] M. Praetorius, *op. cit.*, p. 55.

[42] F. W. Galpin, *op. cit.*, p. 28. But in his *Textbook of European Musical Instruments* (1937), p. 99, he talks only of *arch-cistres.*

[43] Ruth-Sommer, *Alte Musikinstrumente* (1920), p. 37.

[44] T. Morley, *Plaine and Easie Introduction to Practical Musicke* (1597), p. 120.

[45] H. M. Willsher in Grove's *Dictionary* (4th edn., 1940), supplementary vol., p. 581, article *Scottish National Music.*

[46] R. Newton, *loc. cit.*, pp. 72–5.

[47] Quoted by P. A. Scholes, *Puritans and Their Music* (1934), p. 146.

[48] In *Acta Musicologica*, VI (1934), p. 176.

[49] J. Ritson, *Ancient Songs* (1793).

[50] cf. preface to his *Little Consort* (1656).

[51] cf. his *Compendium* (edn. of 1732), p. 118.

[52] T. Mace, *op. cit.*, p. 34.

LIST OF SOURCES

I. Printed Books

The breffe and playne instruction to learne to play the gyttron and also the cetterne (Rowbotham, 1568)	lost
A new Booke of Citterne Lessons (Barley, 1593)	lost
A. Holborne, *The Cittharn Schoole* (Short, 1597)	C. R.
The Cambridge copy was Dr John Bull's.	
R. Alison, *The Psalmes of David in Meter* (Barley, 1599)	BM.
A second copy was lost at sea during World War II.	
T. Morley, *The First Booke of Consort Lessons* (Barley, 1599)	cittern; B.
Only four of the six part-books of this edition have survived.	

T. Robinson, *New Citharen Lessons* (Barley, 1609)	BM. N.
P. Rosseter, *Lessons for Consort* (Este *alias* Snodham, 1609)	cittern; R.
Only two of the six partbooks, together with a few mutilated leaves of a third, have survived.	
T. Morley, *The First Booke of Consort Lessons* (Snodham, 1611)	cittern; lost
Of this second and enlarged edition of the 1599 work, only two of the six partbooks have survived.	
Sir W. Leighton, *The Teares or Lamentacions of a Sorrowfull Soule* (Stansby, 1614)	BM. C. R.
A new Book for the Cithren (Playford, 1650)	lost
A Booke of New Lessons for the Cithern and Gittern (Playford, 1652)	E.
Musick's Delight on the Cithren (Playford, 1666)	B. BM. F. H. HD. HN. W.

II. Manuscripts

Add 30513	BM.
Dd. 4.23, Dd.14.24	C.
Panmure House MS	Earl of Dalhousie

The following abbreviations are used in this list:

B.=Bodleian Library, Oxford
BM.=British Museum, London
C.=University Library, Cambridge
E.=Euing Music Collection, Glasgow
F.—Fitzwilliam Museum, Cambridge
HD.=Harvard College Library, Cambridge (Mass.)
HN.=Henry E. Huntington Library, San Marino (Cal.)
R.=Royal College of Music, London
W.=Library of Congress, Washington (D.C.)
(after Day and Murrie, *English Song-Books*, 1651–1702 (1940), p. xvi)
N.=Cummings Collection, Nanki, Japan
H.=Catalogue No. 25 (1947), Otto Haas, London

NOTES AND QUERIES

AN UNUSUAL ENGLISH BASSOON

TO THE EDITOR:

A bassoon having the stamp of the London firm of Goulding & Co. and presenting some unusual features has just come to light. The butt is marked 'Goulding, D'Almaine & Co.', while the other three sections are all branded 'Goulding & Co.' and the wing is also marked 'Jas. Wood & Sons, Patent'. This latter seems to apply to the tuning slide which is fitted to the crook socket and is identical with one on a Jas. Wood bassoon in the writer's collection. It seems likely, in fact, that the whole instrument is the product of the Woods' workshop. The interesting feature of the specimen lies, however, in the key-work. There are 11 cupped keys of heavy cast brass mounted on saddles. On the long joint are those for B flat and D as usual, but the E flat is placed at the front and operated by the left little finger. On the wing joint there are the usual high A flat and B flat keys, but in addition there is a closed C sharp key for the left thumb. It is the butt, however, which presents the greatest peculiarities, for here there is in addition to the usual open F natural a closed duplicate key on the other side, and the touches of both this key and the normal F sharp thumb key are placed *above* the thumb hole. The figures show both sides of this joint in detail. None of the keys appear to be additions, and all, except the B flat and D on the long joint, have chamfered seatings for the pads.

Here then we have what appears at first sight a typical English bassoon of about 1830, by one of the best-known London makers, yet showing certain markedly German features. Was it an experiment or was it made to the order of some visiting German player? Former owners of the instrument are known, but no evidence of any German connection is forthcoming from that source. Have any readers come across a similar specimen or have they any suggestions to offer?

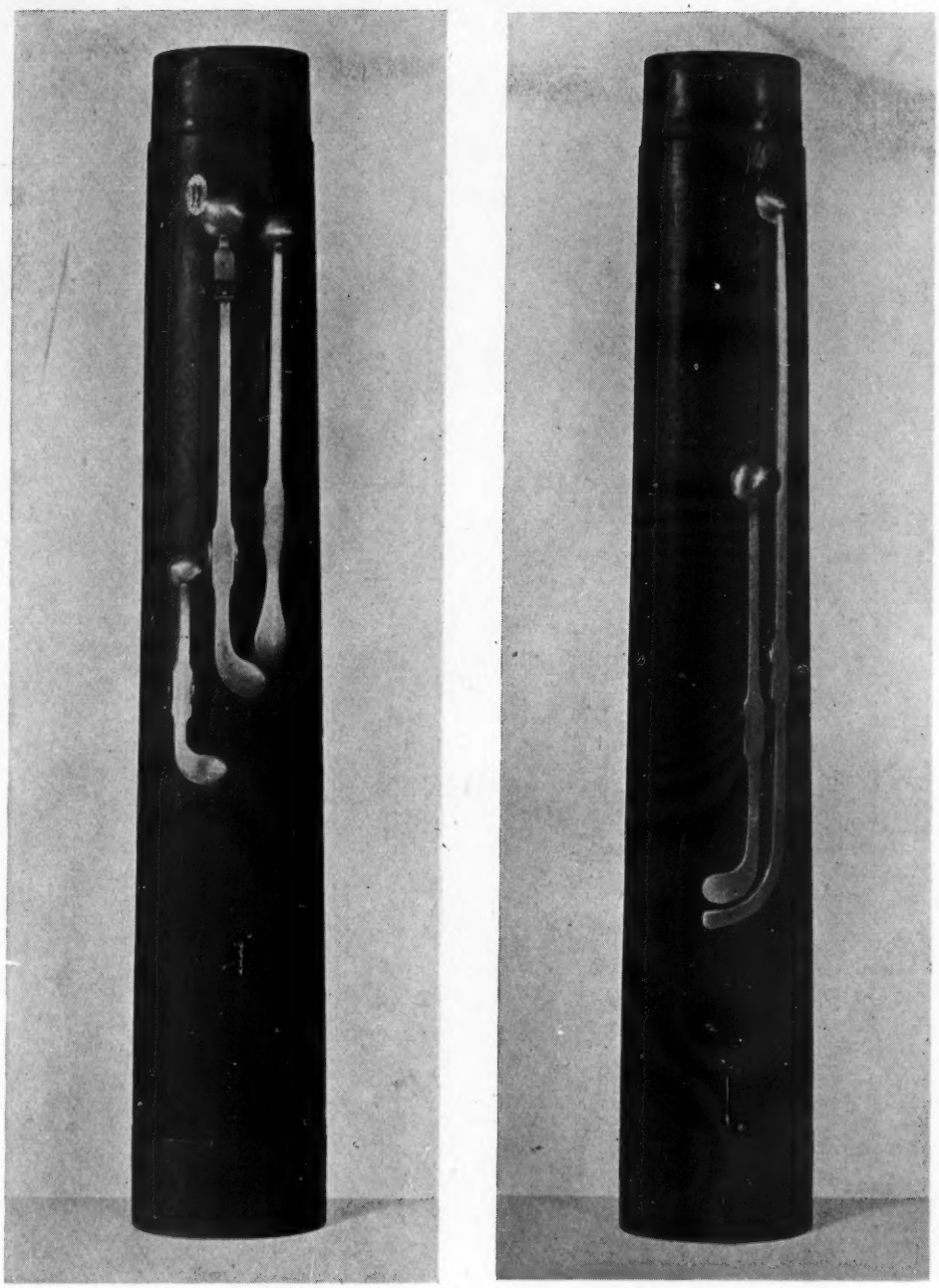
I am, yours, etc.,

PHILIP BATE

A TUNING HAMMER FOR BOWED INSTRUMENTS

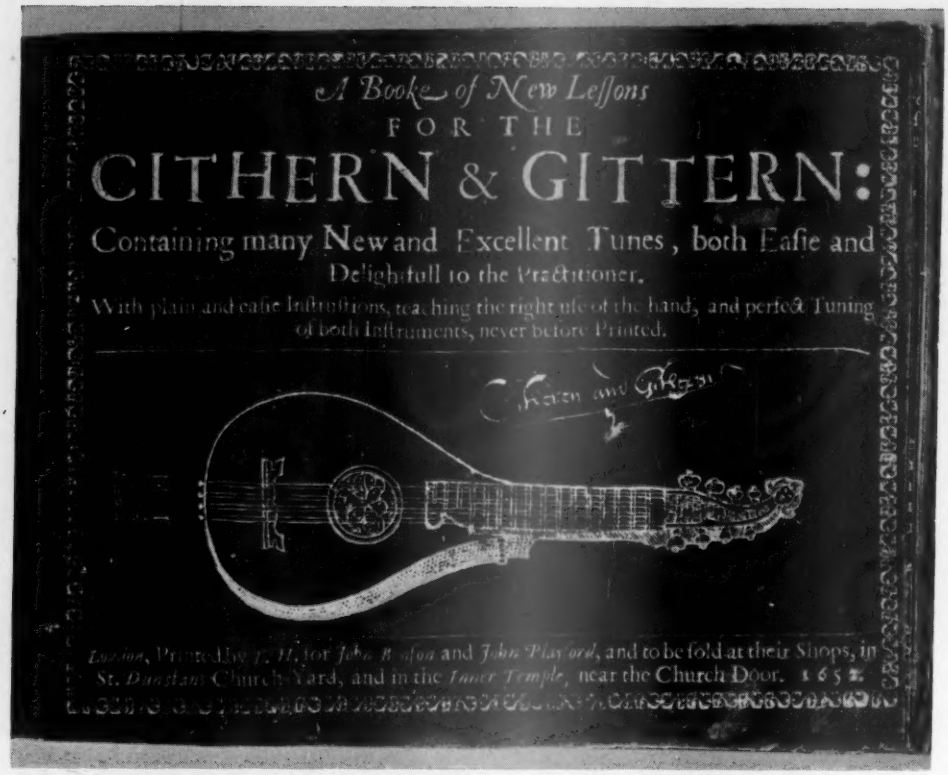
TO THE EDITOR:

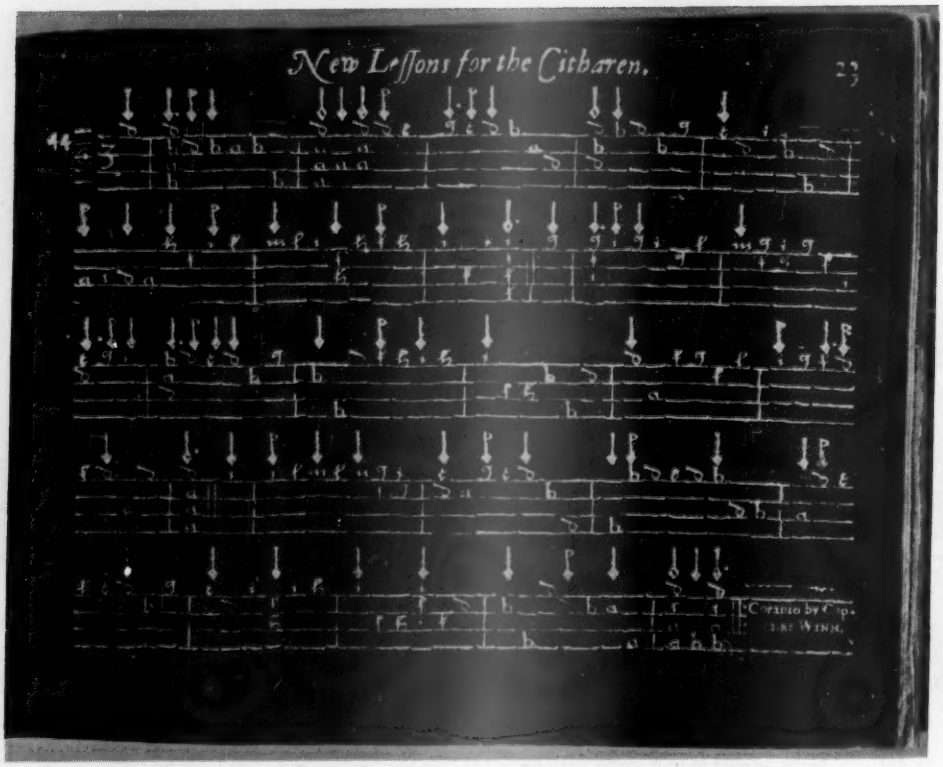
In the supplement to Diderot's *Encyclopédie*, Pl. V, 2nd Suite, depicts the *Vielle à roue*, and Fig. 12 of this plate shows a 'clé' which appears to be a species of tuning hammer, intended for use on the wooden pegs of the instrument. The bosses of the hammer are slotted to take the touchpieces of the pegs, which are of the normal type then used.



AN UNUSUAL ENGLISH BASSOON

Front and back views of the Butt


A Booke of New Lessons
FOR THE
CITHERN & GITTERN:
Containing many New and Excellent Tunes, both Easie and
Delightfull to the Practitioner.
With plain and easie Instructions, teaching the right use of the hand, and perfect Tuning
of both Instruments, never before Printed.
Cithern and Gittern
London, Printed by T. H. for John Benson and John Playford, and to be sold at their Shops, in
St. Dunstans Church Yard, and in the Inner Temple, near the Church Door. 1652



A SEVENTEENTH-CENTURY CITTERN BOOK

Title page and a page of music from Playford's *Booke of New Lessons for the Cithern & Gittern* (1652); the music is in tablature. From the unique copy in the Euing Music Collection, the University Library, Glasgow, and reproduced with the University Librarian's kind permission

It occurs to me that such an accessory would be extremely useful on all multi-strung instruments, such as the viola d'amore, lute or cittern, the pegs of which are almost invariably too narrow to be turned comfortably by hand. The pegs of all such instruments are flat on the sides and wedge-shaped, terminating in a turned knob or pin which is sometimes of ivory. Such a shape would accord very well with the use of a hammer, the wedge ensuring that the slot in the latter would 'bite', while the pin would serve to centre the hammer on the peg if a corresponding hole were made at the middle of the slot.

The lower tension of the strings on most of these instruments, and the fact that some of them employ wire strings, entails much smaller tuning movements than on, say, the modern violin, and these finer adjustments can only be made satisfactorily on a wooden peg by using some such device.

I should be very interested to learn whether anyone has ever found a 'clé' of this type, without perhaps realizing its purpose, since I have never seen any reference to its use.

I am, yours, etc.,

ERIC HALFPENNY

PS—I have just noticed that in Plate V of Praetorius' *Syntagma*, which shows the Gros Contra-Bass-Geig, a similar tuning key is shown, and the shape of the pegs is clearly adapted for its use.—E. H.

BOOK REVIEWS

VALENTIN DENIS, *De Muziekinstrumenten in de Nederlanden en in Italië naar hun Afbeelding in de 15e-eeuwsche Kunst.* (Antwerp: N.V. Standaard-Boekhandel; Utrecht: W. de Haan N.V.) 1944. 352 pp.+20 plates. Ill. 56*s.* 6*d.*

Interest in the music of the fifteenth century is steadily increasing, partly because it still remains remarkably unexplored by comparison with the music of many later periods, partly because some of its special features, such as a restless inquisitiveness, a rather arid intellectualism and a curiously dissonant harmonic style, are very characteristic of contemporary music. To the student of the history of musical instruments, the fifteenth century is an absorbing one, since it is a period of ceaseless invention and development. Most of the instruments in use during the next three centuries acquired their distinctive forms and technical features during the course of this century. Some, like the chekker and the chime-bells, fell out of use almost at once, only to be rediscovered three or four hundred years later in the pianoforte, the glockenspiel and the tubular bells. Others, like the viols or the recorders, reached their perfection only when, towards the last decade or so of the century, the increasing fashion for homogeneity in tone-colour displaced the older liking for highly-spiced contrast,

and when, as a result, families of instruments came into being, differing widely in size yet uniform in tone-quality.

But the historian's task is handicapped by the great rarity of surviving specimens of fifteenth-century instruments. Many of them no doubt perished during the sixteenth century, which had little respect for the work of older craftsmen and none of the seventeenth century's admiration for 'period pieces'. What must have been an outstanding collection of fifteenth-century musical instruments and MSS—it formed part of a princess's dowry—was destroyed by a devastating fire in Spain a century ago. In consequence, paintings, miniatures and sculptures must be studied instead, and the work of assembling, collating and deducing is very laborious.

M Denis's valuable study omits none of these processes. Confining himself to Dutch and Italian art, he has set out to trace the development of each of the more important instruments as it is depicted in the work of fifteenth-century artists. He has illuminated his history with more than 230 line-drawings of instruments, copied with painstaking accuracy from material drawn from most of the big art collections in Europe and America, together with twenty half-tone plates of the most important sources.

The book is divided into three sections. The first 140 pages deal with string instruments. Four chapters on bow instruments (fiddle, rebeck and gigue, tromba marina, hurdy-gurdy) are followed by six on plucked and struck instruments (harp, lute, mandora, mandoline, cittern, gittern, cithara and lyre, psaltery, dulcimer, clavichord and harpsichord). A second section of sixty pages consists of six chapters on wind instruments (organ, trumpet and sackbut, horn, oboe, shawm and cromorne, bagpipe, flute and recorder), and a final thirty pages deal with percussion instruments. In addition there are three indexes and a comprehensive bibliography, as well as an excellent fifteen-page summary; it is hoped to print a translation of this summary in a future issue of the JOURNAL, so that the English reader may have the benefit of M Denis's research. His book is one of the most outstanding organological studies of recent years.

D.

ERNEST CLOSSON, *History of the Piano*. (London: Paul Elek.) 1947. 168 pp. Ill. 12*s*. 6*d*.

A short, scholarly, yet easily-written book on the history of the piano has long been needed. A few years ago a Belgian firm announced the publication of a book on this subject by M Ernest Closson. His reputation as an elder statesman of Belgian music and his position as curator of the Mahillon collection of instruments whetted one's appetite for what should have been an excellent study.

But this English edition of the book is sadly disillusioning. It is divided into three sections: twenty pages on the clavichord, forty on the spinet and harpsichord, and fifty on the piano. An introduction, an appendix giving details and drawings of various piano actions, a bibliography and an index complete the book, which is illustrated with some sixteen plates, many line-drawings and

musical examples. An arresting dust-jacket and a self-consciously elaborate typography compel attention. But the attentive reader will find much that is strange. On page 15, for instance, he is informed that 'the word clavichord appears for the first time in 1484 [and] the oldest picture of the instrument seems to be that . . . in a French manuscript of the sixteenth century'. But Eberhard Cersne uses the word in his *Minne Regel* (1404) and there are three well-known delineations of the instrument dating from about 1440. At page 24 is a very inaccurate drawing of a mechanically impossible clavichord; the curiously elongated harpsichord on page 42 has two superfluous bridges and the clavicytherium on page 49, as well as the virginals on page 37, none at all. The instruments illustrated on pages 27 and 28 are both dated 1571; one was in fact made in 1521, the other in 1751. Silbermann's *cembalo d'amore* (page 32) was certainly not a 'perfected clavichord'. Though it may have had a bigger tone, the fact that its tangents struck the strings at their most elastic point, the middle, meant that the player had little control over his tone and less over his intonation. Page 33: 'Mme Landowska argues that in Bach's time the clavichord was not yet furnished with a separate string for each note, a consideration which would make equal temperament practically impossible.' Not at all, though certain chords would remain impossible. Page 35: 'We do not know precisely when the [spinet or harpsichord] was invented, but it is generally believed to be towards the beginning of the sixteenth century.' Arnault's treatise (*c.* 1440) gives a complete layout for a single-manual harpsichord as a matter of course. Page 47: 'The lute-stop . . . employed jacks wrapped in cloth.' No such lute-stop has ever existed. Page 50: '[the harpsichord's] variety of timbre was developed to the extreme limit by the artifice of pedals and stops which permitted the different voices in a complex fugal composition to be clearly isolated.' But these pedals and stops do nothing of the sort. Page 55: 'Tuning was done by giving four *commas* to the diatonic semitones . . . and five *commas* to the chromatic semitones.' Certainly not; tuning was 'done', then as now, by thirds, fifths and octaves. Mean-tone tuning *resulted* in this distribution of commas. And mean-tone was not 'known as "unequal temperament".' Page 60: the present accepted pitch-standard in England and America is A=440, not 435. Page 75: Ruckers combined a two-manual harpsichord not with a spinet but an ottavina. The book's terminology is continually imprecise. Page 76: Erard's 'invention' of a mechanical harpsichord was nothing new; Henry VIII had one over 250 years earlier. Page 81: Dr Harding's reprint of Giustini's sonatas was published in Cambridge, not in London. Four out of five musical examples on page 101 and another on page 117 all have something wrong with them. A drawing (page 130) of an action patented by Broadwood in 1783 is ascribed by M Closson to Zumpe in 1766. But these are only a few of the more obvious errors.

In this mixture of fact and fancy, the translator (Delano Ames) is responsible for many deft touches. Some are Frenchisms: p. 10 'cithare', p. 53, '*gamme heptaphone*' (why not heptatonic scale?); p. 64, 'octavate' (i.e. overblow at the octave. Does decimate mean to overblow at the tenth? Is the Primate the fundamental note of an instrument?); p. 66, '*Retable de Maitre Pierre*' (usually

known as Master Peter's Puppet-show). And in what language is *viola d'amour*? p. 71, 'Elizabeth Stuart, ephemeral Queen of Bohemia'; p. 76, 'oculair harpsichord' (M Closson's dating for this freak instrument is about fifty years too late); p. 88, 'sounding board', p. 91, 'castonette'; p. 126, 'registering pianos' (i.e. for recording extemporizations); p. 148, 'Tomes I a VIII' (i.e. vols. I to VIII). Others, like the combination of organ and harpsichord which (p. 75) was 'constructed in Italy in the sixteenth century and taken up again in Paris in 1765 by Berger with knee pedals', fill one with the quaintest notions. Who moved it to Paris? And who was the weight-lifting M Berger? Why did he not try to take it up with a crowbar?

To publish a work of this kind is to damage musical scholarship wantonly. The growing music-loving public needs books which shall be well-written, up-to-date and accurate. This book is not one of them.

H. G., E. H. and D.

KNUD JEPPESEN, *Die italienische Orgelmusik am Anfang des Cinquecento*. (Copenhagen: Munksgaard.) 1943. 130 pp.+82 pp. music. 34*s*.

Continuing his studies in sixteenth-century Italian music, Dr Jeppesen has turned his attention to the school of organists which flourished during the first quarter of the century. This finely-printed book deals with two collections of organ music, Marc'Antonio Cavazzoni da Bologna's *Recerchari, Motetti, Canzoni, Libro Primo* (Venice, 1523), and Andrea Antico da Montona's *Frottole Intabulate da Sonare Organi* (Rome, 1517). These are the earliest printed Italian organ music to have survived; if Petrucci ever made use of a privilege to print *intavolature d'organo* which he obtained in 1498, the works themselves are lost. The unique copy of Cavazzoni's book is in the British Museum. Antico's had long been considered lost, but in 1939 Dr Jeppesen discovered a copy in the library of the Marchese Polesini at Parenzo.

After an introduction concerning the history of organ music in Italy before 1500, there follows a long and minutely documented chapter on early Italian organs. Up to the end of the sixteenth century their specifications are of one uniform type; one manual (with sometimes an octave of pull-down pedals) having a diapason chorus (metal) plus one or rarely two flute stops (wood). The chorus consisted of octaves and quints only, their number depending on the size of the organ. Thus a little 5-stop organ built at Lucca in 1495 contained *Tenore* (probably 8′), *Octava* (4′), *Quintadecima* (2′), *Vigesimaseconda* (1′) and *Flauti* (probably 4′). Larger organs would have additional quints and octaves up to *Trigesimasexta* ($\frac{1}{2}$′), though the *Duodecima* ($2\frac{2}{3}$′) is very rare. Towards 1600 a solitary reed stop (*Regallo* or *Voce umana*) was introduced. The transparent, sparkling tone of these lightly-winded organs, tuned in mean-tone temperament, must have been most lovely and very individual. German and Spanish organ specifications of the same period are in sharp contrast; 16′, 8′ and sometimes 4′ imitative reeds (*Posaune* or *Trompeta Reale*), 5-rank mixtures, two manuals and an independent set of pedal stops—this is a different world of music.

The next two chapters deal separately with Antico's and Cavazzoni's books. Their contents are as far as possible identified and carefully collated with contemporary printed books and MSS, and the idiosyncrasies of their styles are commented on in great detail. The power of the analytical methods used in Dr Jeppesen's earlier and famous book, *The Style of Palestrina and the Dissonance*, is again apparent.

An eighty-page musical appendix concludes this important study. It contains the whole of Cavazzoni's book, with in addition part of a Mass à 4 ascribed to him, and a generous selection from Antico's. The original *frottole* are printed bar by bar in score above Antico's organ transcriptions. This appendix would be even more valuable if the author had abandoned two small scholarly pedantries. The use of the original obsolete clefs in the vocal scores and of separated quavers in the keyboard music is surely an unnecessary obstacle for the reader. Modern clefs (the originals could be given in a footnote) and grouped quavers (♫♫♫ where Cavazzoni has ♪♪♪♪) would be so much more readily comprehended, and the book contains seven facsimiles of the original editions for those interested in the curiosities of early keyboard notation. But these are inconspicuous blemishes in a most informative and penetrating study.

D.

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